

Journal

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Editorial.

In the issue of the Journal for January 1934 we published some remarks under this heading, we are repeating these in the first issue for 1935

A statement of the financial state of the Journal will again be published in the April issue It is satisfactory that, in spite of retirements from the Service during the year, the number of subscribers to the Journal has not decreased

We would still encourage contributors to send articles for publication We have been gratified, during 1934 at the efforts made by many new contributors, especially among the more junior medical officers and the articles which we have received from the latter have shown an interest in, and a conception of, the medical problems of the Royal Navy which is most encouraging for the future

We acknowledge our indebtedness to contemporaries for permission to reprint certain articles which we believe to have been of special interest to us, these are The Royal Society of Medicine *Guy's Hospital Gazette* The Public Health Service of the United States of America, and *The Medical Press and Circular*

The outstanding features of the year, as far as the Medical branch of the Royal Navy is concerned have been the introduction of the new regulations concerning our branch, and the arrival at Haslar of the first "Course" of Surgeon Lieutenants for Instruction in Service matters since 1914 In spite of this occurrence it is understood that the breakage list in the medical mess has not gone up unduly, the mess, however does undoubtedly show more signs of life

The annual reunion dinner to retired medical officers was held at Haslar on October 26, and on this occasion was extended to one of welcome to the "Course"

Under the heading of 'Notices" in this issue we have inserted some details in reference to King Edward VII Convalescent Home at Osborne

We are satisfied that the existence of this establishment is not sufficiently known and we recommend medical officers to bring it to the notice of those members of theirs who are eligible for admission

Once again we draw our readers attention to the Navy Medical Comforts Fund and to its necessity for our support This is the one and only charitable subscription which is entirely our own

We have received information, and noted in this issue that Charing Cross Hospital Medical School is celebrating its centenary, 1834 1934 and we offer our sincere wish that it will be as successful in the future as in the past

Finally we thank those who have supported the Journal with articles and criticism during the past year

Original Articles.

THE MANAGEMENT OF CASES OF HEAD INJURY[1]

By Surgeon Commander JAMES RUTHERFORD MACLEAN M.R.C.S. L.R.C.P. R.N.V.R.

Fellow of the Royal College of Surgeons of England Assistant Director of the Surgical Unit The Welsh National School of Medicine Cardiff

"Experience tames the mind and makes it docile to fact leaves it no rest" JOHN HUNTER

Introduction As head injuries may be of any degree of severity may vary enormously in the way in which they are produced and may result from causes which are many and diverse and which may be related to one another in a multitude of ways, any general consideration of such a subject must of necessity be of but a sketchy and somewhat incomplete character Although no two head injuries are exactly comparable and although there is no pathology common to any consecutive series of cases, when any large series is examined as a whole certain principles will be found to emerge and, also owing to the frequency of road accidents to-day large series of cases are only too readily to be found throughout the hospitals of the country

It is proposed here to take up certain practical aspects of the subject such as concussion and its treatment the significance of fractures of cerebral oedema and the indications for operation in cases of head injury, and to avoid such realms of academic speculation as the nature of certain mental states seen in some cases or the precise manner in which particular symptoms are produced if indeed "under any circumstances we should be willing to cast a line into such fathomless abysses of speculation"

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[1] From the Surgical Unit The Welsh National School of Medicine The Royal Infirmary Cardiff

[illegible] of the mechanism of [illegible] concussion [illegible] following upon [illegible] blow [illegible] the skull [illegible] Medical Director, of University College Hospital, [illegible] subject of [illegible] being more [illegible]

CONCUSSION

[illegible] may be laid down [illegible] head injury [illegible] with [illegible] symptoms of a purely paralytic kind [illegible] followed by amnesia for the actual moment of the accident

From this definition it will be apparent that the subject of a head injury who is unconscious for half an hour or longer is not suffering from concussion but rather from some gross cerebral injury such as contusion or laceration, and further that the patient who can tell us all the details of the accident and who remembers the precise impact which caused his head injury has not been concussed. The medico-legal significance of this will be obvious. It appears as if a latent interval occurs in the registration of cerebral impressions, and because of this a sudden interference with the mechanism of registration as by concussion or by more gross types of head injury results in a complete loss of the mental record of the impact which produced the injury. This phenomenon appears to be a very kindly provision on the part of Nature as it would seem that severe psychic shock might ensue were the precise details of the accident to remain clear in the mind of the victim. Mercifully the accident though seen by him is not realized: he remains oblivious to its details: all sense of its proportions is lost, and as George Eliot once said, "If we had a keen vision and feeling of all ordinary human life it would be like hearing the grass grow, or the squirrel's heart beat, and we should die of that roar which lies on the other side of silence."

Contusion and Laceration of the Brain

Before considering the treatment of concussion, it will be as well to deal with certain other results of head injury and chief among these is damage to the brain itself in the form of contusion and laceration. In all cases in which there is prolonged unconsciousness following a head injury, such damage may be assumed, and where neurological signs appear at the time of the accident and persist these in the majority of cases may also be assumed to be due to cerebral damage produced at the time: e.g. a monoplegia appearing at the time of an accident is almost always due to laceration or contusion or both occurring in the motor cortex or elsewhere in the course of the pyramidal fibres to the upper limb.

Geoffrey Jefferson [2] has recently urged the necessity of distinguishing such neurological signs from those of a focal character which arise later and

which he designates epiphenomena These are frequently due to haemorrhage and may call for operation From time to time therefore, in the management of a case of head injury, it is very desirable to make a careful neurological examination of the patient The writer's experience is entirely in accord with these observations of Geoffrey Jefferson as is illustrated by examples in the section of this paper dealing with treatment

Fractures

A question that will arise in most cases of head injury is whether the skull is fractured or not and although this question is frequently of little or no clinical significance, the answer is sometimes very important When given the opportunity our legal friends make much of whether the skull has been actually fractured and although it is perhaps a little difficult to understand this it may be a survival of the fact that Astley Cooper held that fractures of the base were invariably fatal Perhaps the weight of his authority may still influence legal precedent!

Although it has been decided not to discuss the mechanism of skull fractures, it may be useful to refer to an expression which every student remembers, namely, 'contre coup It is almost as reasonable to expect that a blow delivered to one side of the skull can break the other side as to expect that when an egg is tapped on one end with a spoon the other end will crack It is important to remember, however, that gross damage to the brain may occur by contre coup, and I have several times noted extensive cerebral contusion at a point on the surface of the brain diametrically opposite the point on the skull at which the blow had been delivered and at which in some cases fracture had taken place

Evidence of fracture of the base of the skull may be apparent in the escape of cerebrospinal fluid from the nose and ears and this leakage may be regarded as positive evidence even when, as is frequently the case, x ray examination fails to reveal a basal fracture

There are two very important classes of fracture however, which as they demand special treatment require separate consideration These are compound fractures of the skull vault and depressed fractures, the treatment of each of which will be considered at some length in a later section

Epiphenomena.—These may be defined as neurological signs of a local character or indicative of increasing generalized compression superimposed on the clinical picture originally produced by the head injury As an illustration one may cite a case which three days after a head injury develops a monoplegia which gradually increases so as to become a hemiplegia The new neurological signs (hemiplegia, &c.) are epiphenomena Epiphenomena are of great significance because they so frequently indicate haemorrhage calling for surgical treatment, and so, in general terms, it may be said that when focal signs arise relatively late in the course of a head injury, exploration is called for at the site indicated by the signs and symptoms

A farm labourer aged 39, was admitted [illegible] Hospital Unit of the Cardiff Royal Infirmary, semiconscious and restless. It might be had received a blow over the left temple with a part of a steel plough. Three days after admission, while still semiconscious, he developed a right monoplegia which soon progressed to a hemiplegia. Because of the supervention of epiphenomena, a left osteoplastic exploratory craniotomy was carried out. A large amount of extradural blood clot (83 grm.) from a ruptured middle meningeal artery was removed and the bone flap replaced. He made a complete recovery.

Middle Meningeal Hæmorrhage

From the prominence rightly given to descriptions of this condition in textbooks of surgery, students are apt to regard it as of common occurrence, whereas it is really somewhat rare. Some years ago at a discussion on this subject by the members of the Society of British Neurological Surgeons some surprise was felt, first at the comparatively few cases which had been seen and dealt with by the members present, and secondly at how few of these cases had followed the classical description of the condition given in the textbooks of surgery. It must be concluded that middle meningeal hæmorrhage is rare and that when it does occur it only infrequently presents the classical clinical picture depicted in the textbooks. The classical picture is well known—a blow on the head followed by unconsciousness, then recovery of consciousness, i.e., *a lucid interval*, and then loss of consciousness again. This second loss of consciousness associated as it is with signs of compression may be regarded as an epiphenomenon and therefore an indication for exploration. The case of the farm labourer already referred to did not follow the classical description. Another case may be noted.

A schoolboy, aged 12, when playing at school one morning was hit over the left parietal bone by a small stone which had been thrown at him by another boy. He was only slightly dazed and did not lose consciousness but continued at school. That night he had a headache but was otherwise well. During the following week his parents noticed that he was becoming more and more drowsy and five days after the blow he was semicomatose. Craniotomy was performed at the site of the blow and outside the dura mater a large mass of blood clot from a torn middle meningeal artery was found and removed. He regained consciousness shortly afterwards and has been very well since.

These two cases serve to illustrate non-classical clinical pictures of meningeal hæmorrhage, in each case however, it will be seen that epiphenomena arose and called for operation.

Before leaving this consideration of epiphenomena it may be as well to summarize thus—during the course of all cases of head injury the surgeon should be on the look out for epiphenomena such as the onset of monoplegia, a relapse into coma, or medullary compression indicated by respiratory failure as these signs may call for immediate operation [5].

Cerebral Irritation.—Cerebral irritation is a clinical state of noisy restlessness seen in certain cases of head injury. It frequently follows an

[5] The writer's method of performing osteoplastic craniotomy for such cases is described in the *British Journal of Surgery*, 1930, xviii, p. 231—233, and in *Medical Press and Circular*, 1933, cxxxvi, p. 448—450.

interval of unconsciousness and is possibly due to widespread laceration and contusion and reactionary œdema of the frontal lobes It cannot be regarded as an epiphenomenon as it is not indicative of compression nor has it a focal significance It is not an indication for operation

Treatment

"In the case of head injuries, it is of cardinal importance that diagnosis and treatment should be kept in a close and living association with pathology In every case it is essential that the surgeon, before attempting to begin the treatment, should make a determined effort to call up the clearest possible picture of the actual conditions within the skull of the patient he has to deal with —Wilfred Trotter.

The treatment of all head injuries must not only be directed towards the preservation of life and function but also to the prevention of sequelæ such as post traumatic headache Cases of concussion and of uncomplicated contusion and laceration require immediate physical and mental rest To ensure this they should be kept in bed in a quiet and darkened room and in order to check the reactionary œdema which follows the cerebral injury, gently continued dehydration should be carried out by administering magnesium sulphate solution by the rectum In the Surgical Unit of the Welsh National School of Medicine this is effected by administering to all such cases at six hourly intervals, 6 oz of a 30 per cent solution of magnesium sulphate [4] By gradual withdrawal of fluid from the skull, the brain is permitted to swell as it tends to do as a result of injury Pressure atrophy is thereby avoided or minimized It is a general pathological principle applying to encapsulated organs subjected to injury that if the capsule is distensible the organ in reacting to injury is permitted to swell and pressure upon its parenchyma is thereby prevented, but if, on the other hand the capsule is rigid or relatively inelastic the organ is prevented from swelling and the reaction to injury results in pressure atrophy As an example of this the kidney with its elastic capsule may be compared with the testis with its inelastic tunica albuginea A bruised kidney swells and there is as a rule little subsequent interference with function, a bruised testis cannot swell its parenchyma undergoes a pressure atrophy and it consequently shrinks until it is possibly only one half of its original size If we apply the foregoing principles to injury to the brain, we find that the brain case is rigid and cannot expand, but in addition to containing brain substance and blood vessels, the skull contains much cerebrospinal fluid By continuously withdrawing some of this by means of rectal magnesium sulphate we minimize post traumatic neural pressure atrophy by permitting cerebral expansion the inevitable reaction to cerebral injury as to injury to other organs

Lumbar puncture —As a routine this is not necessary or advisable but it is occasionally useful by affording an indication of the state of intracranial pressure and by showing whether bleeding has occurred into the subarachnoid spaces As a means of reducing intracranial pressure it is likely

to be somewhat drastic and therefore less effective than the dehydration treatment already advocated If however the fluid contains an intimate mixture of blood lumbar puncture carried out every two or three days to rid the subarachnoid spaces of blood which tends to set up a reaction in them is at times advisable

Scalp wounds—Although the relatively great blood supply of the scalp results in a ready healing of most scalp wounds, the presence of emissary veins leading from the subaponeurotic lymph space renders this space a well known danger area and, therefore, any scalp wound extending into this space that fails to heal and continues to discharge should be regarded with grave suspicion, its edges excised and efficient drainage from the space established The possibility of an intracranial spread of infection by way of emissary veins has always to be kept in mind Because of this Percival Pott wrote of the scalp 'This though it be called the common tegument of the head yet injuries done to it become of much more consequence than the same kind of ills inflicted on the common teguments of the rest of the body

Restlessness—The best drugs to deal with this are bromides chloral and its allies such as chloralamide, and hyoscine Except in very minute doses morphia is best avoided in most cases because of its depressant effect on respiration

Fractures—Those which call for special treatment are first compound fractures of the vault of the skull and secondly depressed fractures The importance of these fractures depends upon the fact that each is an indication for operation and in the case of compound fractures urgent operation in order to excise damaged and infected tissue and as far as possible prevent the spread of infection To ascertain if a fracture is present all head wounds should be very carefully examined by inspection and if necessary by palpation and probing under strictly aseptic conditions If a fracture is found and the patient's condition permits, the case should be taken to an operating theatre at once and the compound fracture of the skull treated like compound fracture occurring elsewhere in the body The damaged and infected wound edges should be excised the bone examined loose fragments removed and the dura mater carefully inspected If undamaged the dura must not be opened but if it has been torn its torn edges should be excised and any damaged brain and foreign material removed the whole wound carefully and thoroughly washed with hot saline bleeding arrested and the wound closed with suitable drainage

It is gratifying and surprising how well such cases do and although not infrequently when operating on these cases I have had occasion to remove road dirt coal dust grease and various forms of filth I have not once seen meningitis following treatment such as that outlined and even when rather gross cerebral damage by fragments of bone driven into the brain substance has complicated the picture and necessitated a somewhat extensive operation for the removal of the fragments as well as the toilet of the wound

Where depression of bone fragments exists, operation must also be undertaken as soon as possible if the fracture is compound, at an early date if simple. In the latter case there is not the extreme urgency that there is in the case of compound fractures. The indications are of course to elevate the depressed fragments and thereby prevent encroachment on the cranial capacity.

The importance of *x*-raying cases of head injury has been drawn attention to by Surgeon Rear-Admiral Pickering Pick [3] and by the writer [6] in a previous issue of this Journal.

Conclusion

In conclusion, when confronted with a case of head injury we must determine whether we are dealing simply with cerebral concussion, or whether cerebral contusion and/or laceration are present; whether there is a fracture, whether if so this is simple or compound, and/or depressed. We must decide whether the treatment of the case must be immediate operation or rest and dehydration. When the case is under treatment we must watch carefully for signs and symptoms indicative of a slowly accumulating intracranial haemorrhage (epiphenomena). The methods whereby we may reach conclusions as to the solution of these several points have been outlined in this paper, and it is hoped that these may prove helpful in the management of cases of head injury which are met with in the Service.

References

[1] Trotter W.—On Certain Minor Injuries of the Brain. *Brit. Med. Journ.* 1924, i, 816.
[2] Jefferson G.—Remarks on the Treatment of Acute Head Injuries. *Ibid.* 1933, ii, 807.
[3] Pick M. Pickering.—A Case of Head Injury with few Clinical Signs. Journal of the Royal Naval Medical Service, xix, No. 3, July 1933, p. 184.
[4] Rogers Lambert.—Intracranial Pressure: its Clinical and Pathological Importance. *Proc. Roy. Soc. Med.*, May 1929, xxvii, Section of Neurology, pp. 29-34.
[5] *Idem.*—The Posterior Fossa Compression Syndrome. *Brit. Med. Journ.* 1933, ii, 100.
[6] *Idem.*—The Importance of X-raying Cases of Head Injury. Journal of the Royal Naval Medical Service, xx, No. 3, July 1933, p. 184.

PHYSICAL TRAINING IN THE ROYAL NAVY[1]

By Captain R. L. Burnett, O.B.E., R.N.

Director of Physical Training and Sports.

I feel that I have been greatly honoured in being asked to read to you a short paper on present day physical training. I am grateful for the opportunity as I am convinced that without the backing and co-operation of the medical profession there can be no progress and unless the physical training expert has the strong backing of your profession no authority can be brought to realize the vital importance of the physical education to the young. I will go so far as to say that the scientific physical education of

[1] A Lecture given at R.N. Hospital, Haslar, October 1934, to Medical Officers of the Fort.

[illegible] carefully [illegible] throughout [illegible] would [illegible] seriously tend to deplete the income of the general [illegible] and on the other hand considerably reduce the labours of the [illegible] but to us who are servants of the Crown whose advancement does not depend on the number of sick bodies which are to be healed [illegible] on the general well-being of the community we have to serve, this subject should receive the greatest attention if it is to obtain the maximum results You know better than I do the startling statistics on the physical degeneracy of the present day which present themselves and which presented themselves during the late war some of you have the existing statistics of the physical inefficiency of the recruits presenting themselves for entry into the fighting services to day

It is common knowledge that in the great days of Rome and Greece physical and mental development were absolutely co-ordinated, we know that in the earlier history of our own nation physical efficiency was the pride of every young man in every sphere of life bodily strength and agility were the all important factors while mental training was confined to only a few A great evolution has been taking place since the middle ages, mental education has been spreading, not only to the upper and middle classes but to those who were at one time known as the labouring classes and whose very livelihood depended on strength and bodily fitness this fitness has gradually become neglected selection for most posts of advancement now being by written examination instead of by practical demonstration of skill as a craftsman Work well done or ability to take charge, regardless of the fact that the Foreman, Petty Officer or Officer was 'no scholard' no longer holds the field

The rush and hurry of modern civilization and so far as we are personally concerned the strain of modern warfare with all its scientific improvements, produces a far greater degree of nervous tension than used to be the case a hundred years ago, before electricity and petrol speeded up civilian life, when men fought at close quarters and physical efficiency gained the day

You know, better than I do, the close connection between the psychology of the individual and his physiological welfare the pressure of mental work at the expense of physical is gradually destroying a great deal of what is natural and normal in the civilized races and is tending to make them highly strung neurotic and delicate As a result of these increasing intellectual strains a gradual decrease of a healthy physique and the development of a delicate and overtaxed organization has arisen which we contend to be one of the chief causes of the national physical degeneration of to day producing the weak chested, nervous and often vicious youth who is to be encountered in all our big cities

The true object of physical training is to increase the strength agility and power of endurance of the youth of to day and at the same time to increase his mental activity By strength I do not mean the putting on

of muscle as it is commonly practised by the layman but the development of an even balance between every organ and function of the body The putting on of muscle alone may be and in many cases is definitely harmful

I will now briefly trace the introduction of physical training into the Royal Navy

In the days of sail, bodily fitness was a natural attribute of the man-of-war's man His daily life aloft or on deck—always in the open air, heaving climbing hauling—developed not only a body of steel and whip-cord combined with the courage and agility so necessary for his profession, but a sense of teamwork and reliance on his superiors and comrades where the mistake of one would lead to the death or injury of a score of his shipmates The advent of steam and mechanical appliances in the place of masts and yards, necessitated the work of our ships being carried out more and more between decks and in enclosed spaces resulting in an insufficiency of fresh air and exercise for the ships companies, less reliance on each other and an apathetic trust in coal and iron While mechanical efficiency, speed, sea-worthiness of ships and radius of action were enormous advantages, the evil effects of these improvements on the morale of the personnel were speedily evinced In those early days there was a complete lack of recreational facilities ashore and the large majority of libertymen, finding nothing else to do drifted into the nearest public houses as soon as they landed, and progressed from house to house with the inevitable result Now, whilst liquor particularly good ale, does little harm to the man of iron physique who can only partake of it at infrequent intervals on him who leads a more sedentary life it has a very different effect The sailors returned to their ships with the effects of good food, and possibly not such good alcohol, heavy upon them with no strenuous exercise to work off the ill-effects, and not the least inclined to 'turn to' again This tended to an increase in crime both petty and serious, and to a general lowering of self respect and morale

It became essential for the general well being of the Navy that this state of affairs should be remedied and my Lords took action They decided to introduce a system of physical training for all boys new entries &c, with the object of attaining a high standard of physical fitness with which to start them on their service life to introduce physical exercise as a part of the ship's daily routine and finally to encourage recreation ashore

In 1888 volunteers were called for to become Gymnastic Instructors, and a qualifying school was started at Whale Island, at Portsmouth Part of the qualifying time was spent at Aldershot in the Army School, and the Navy must always be grateful to the sister service for her ready and willing help in those days and for the close liaison and friendship which has been continually maintained between the physical training branches in the two services during the ensuing half century The instructors, thus trained went out to the fleets and establishments This

[illegible] until 1900 when the Admiralty decided that gymnastics should become a specialist branch of the Royal Navy. The training comprised horizontal and parallel bar work, dumb bells, vaulting, boxing, club-swinging &c. and it gradually became apparent that while these methods did, in fact develop body control and courage and build muscle, in many cases they had the latter effect to a definitely harmful degree. The man who is heavily muscled about the chest cage and abdomen suffers with increasing years from a limitation of the movements of the internal organs and a consequent loss of endurance and perhaps an enlarged heart, amongst other evil effects.

This state of affairs could not be allowed to continue, so in 1902 the late Admiral N. C. Palmer, who was then a Commander and Superintendent of Gymnasia, was directed to examine and report on the various methods of bodily training in vogue at that time. His researches led him in due course to Sweden where he spent some time studying their methods of physical training in naval, military and civil establishments, and his report induced the Admiralty to introduce the Swedish system into the Navy. A start was made at the R.N. Barracks Gymnasium, Portsmouth, when classes of officers and ratings were trained by a Swedish Professor, Mr. Alan Broman and the system thus taught, adapted for, and developed by the requirements of the Service is the basis of the Physical Training side of the branch to this day.

In the medical profession each case must be treated on its merits and it must be realized that the ideal in physical education would be to treat each pupil according to his physical capabilities and intelligence; this, unfortunately is impossible for the same reason that it is impossible for each child to have a separate tutor to develop and improve his mind, and it has been almost universally acknowledged throughout the civilized nations that the best method of physical training is one developed from and based on, what is commonly called the Swedish System.

In Sweden physical training is compulsory. Teachers are drawn very largely from what we may call the officer class and undergo a course of four years duration; owing to force of circumstances the majority of our instructors are of a different class, and the Service can only afford six months for their original training, in addition to the physical training recreational training must be also taught. I have no time to touch on recreational training which is a natural corollary to the former and is somewhat more than the brandy with the castor oil it is one of the main supports of the morale which marches hand in hand with a healthy body and mind.

I wish to sketch for you exactly what a Swedish Exercise Table is—a matter which would be of no interest to the layman, but which will explain to you the fact that it is based on sound scientific lines, and is not just a series of physical exertions emanating from the brain of a parrot taught instructor.

[illegible] a Swedish [illegible] in time that is to say relative among muscles must be exercised to the same extent the lesson must provide adequate exercise for ALL the muscles of the body To avoid fatigue and other bad effects the different sets of muscles must be brought into play successively There must be a definite order for the exercises, starting with easy exercises gradually increasing in difficulty and complexity ending again with easy and lighter work To enable an instructor to regulate his table according to the strength number and state of advancement of his class and to prevent that fatal quality of monotony, there are a list of exercises in Volume I of the Physical Training Handbook which number over 1 300 while combinations and permutations of these exercises provide an infinite variety

Let us therefore start our lesson

First will come the Introductory Exercises which consist of light exercises from each group already known to the class, arranged in a definite order and occupying approximately one tenth of the time of the whole table they should be so arranged as to give a short and easy run over the whole of the body Their object being to fix the attention of the class quickly to loosen the joints and stimulate the circulation of the blood thus preparing the body for the greater exertion to follow

These introductories are followed by the main leg exercise which is placed early in the lesson and before such strong exercises as spanning and heaving to stimulate the circulation in the muscles of the lower extremities to ensure their efficient nourishment. All exercises performed in the standing position, and indeed walking and running depend on the strength and nervous control of the muscles of the legs

Next follows the spanning exercise This exercise is the deciding factor in the strength of any table, the remainder of the table being tuned to it.

This group is of the utmost importance, as its aim is to correct the carriage of the body and to develop a freely movable and resilient chest cage it must be taught with the utmost care by an intelligent person who realizes what he is doing with each progression he employs

The practice of stooping over desks at school, over tables or machinery, in the natural sleeping position and even the crouching forward position adopted at most of our national games tends to produce round shoulders and cramped chests, eventually the pectorals become shortened, the width of the shoulders diminished the coracoid process and the points of the shoulders are drawn forward with the result that the shoulder blades protrude which lessens their mobility This group is designed to counteract these evils to stretch and therefore, to lengthen the pectorals and at the same time lengthen the muscles at the rear of the chest thus drawing the shoulder blades back and down freeing the chest cage and tending to eliminate any unnatural curve forward of the upper region of the spine

A spanning exercise is always followed by some supplementary exercise to counteract any exaggeration and to completely relax the muscles which

[illegible] have been strongly [illegible] that [illegible] objects is a full range of action for all muscles and joints

Having freed the chest helped to eradicate any unnatural curve forward in the spine, and improved the position of the shoulders, we now wish to help to improve the general carriage by exercising principally the muscles of the back This is done by the Heaving Group which comprise exercises chiefly in the hanging position, the apparatus in use being beams wall bars ropes ladders, &c The heave correctly executed is performed by first bring the shoulder-blades back and down and then by strongly contracting the back muscles—chiefly the latissimus dorsi—and bending the arms, thus also exercising the muscles of the upper limbs and those connecting them with the body

The Heaving Group, therefore are designed to strengthen the muscles at the back of the chest, and to educate them to work whilst maintaining an extension of the muscles in front which prevents undue cramping of the chest and consequent interference with free respiration This group and the Spanning Group immediately preceding it when correctly performed, produce a mobile and resilient chest cage

The foregoing groups having been of a strenuous nature some exercises of a lighter character are now introduced from the Balance Group the chief effect of which is on the centre of co ordination and the nervous system generally They exercise all muscles which help to maintain the erect position of the body, but not to any strong degree indeed as the pupil improves the antagonistic groups become so accurately adjusted to each other that only the smallest effort is required These exercises therefore help a pupil to acquire the habit of moving with an easy carriage and with perfect control using the minimum amount of energy with consequent less fatigue

Next follow the Trunk Groups, usually taken in the order, Dorsal Abdominal and Lateral The Dorsal Group which are performed in a prone position either on the desk or over a bench, or in the standing position, bending forward or lunging chiefly employ the extensor muscles, down the length of the spinal column, these which fix the shoulder-blades together with those attached to the arm bone from the back of the chest and are intended to strengthen the muscles of the spine and back generally, thereby giving power to maintain the erect position of the head and body

From these we pass to the Abdominal Group these exercises chiefly employ the muscles forming the abdominal wall and the muscles passing from the front of the pelvis to the front of the thigh bone, and by strengthening and improving the tone of these muscles, influence the carriage of the lumbar part of the spine with the pull they exercise on the front of the pelvis, and thus counterbalance any tendency to excessive hollow back They have also a beneficial effect upon the digestive organs and in combination with the lateral group generally strengthen the muscle of the waist

Next we have the Lateral Group which exercise both sides of the body [illegible] but in opposite directions employing chiefly the transverse and the internal and external oblique muscles of the abdomen the rotators adductors and abductors of the thigh and the spinal muscles These exercises give suppleness to the carriage, they ensure flexibility to the spine and are corrective so far as the lumbar and dorsal regions are concerned, they also assist to counteract tendencies to spinal curvatures.

The Turning Exercises have a tendency to reduce the size of the waist and abdomen, they exert a strong pressure on the internal organs, improving their tone and increasing their healthy action The Trunk Bending sideways exercises spread apart the ribs and extend the intercostal muscles, thus increasing the resiliency and suppleness of the chest

The muscles of the body having thus been attended to in strict rotation and in accordance with their comparative strength, by marching and running we instruct the pupil to walk and run correctly to economize energy to achieve the ability to cover the ground with the minimum of fatigue and to maintain a correct carriage when on the move And lastly, jumping and vaulting which develop judgment, presence of mind, quickness of movement resource and courage, the ability to turn a quickly formed idea into a rapidly performed action, and the power to use exactly the amount of muscular force required and finally, have a general exhilarating effect on the nervous system.

A few light exercises of a corrective character to counteract the effects of vaulting which usually have a tendency to round the shoulders exercises of a somewhat similar nature and strength to the Introductory Group, and the table is completed, the pupil fitter, freer and of a better carriage and ready to undertake the ordinary duties of his station

I have had no time to go into details, to touch on progressions, to enter into the psychology of fitness or the intimate connection between physical and recreational training and their relation to morale, but from my brief description of a lesson I trust you have come to the conclusion that to a layman however hard he studies, the ideal is extremely difficult to achieve and any alteration is a serious risk it would be very dangerous for me, even with twenty-four years experience behind me to alter or to launch out into new ideas it would be folly for me to sit back and stoutly maintain that what is taught at the Headquarters School is perfection Nothing in this world can afford not to progress and not to go forward, stagnation is death and it is here I make my appeal to you gentlemen

We are enjoined by Article 1993 of the King's Regulations and Admiralty Instructions to work together for the prevention of tuberculosis, my branch taking a humble part We are proud to be of any assistance to you Can we not work together more and more to entirely stamp out this frightful scourge and many other ills to which flesh is heir, by using every means in our power to ensure that the personnel of the Royal Navy develop sound and resilient chest cages healthy and responsive bodies which most certainly produce the agile and disciplined mind?

[illegible] on officers of every rank, position and age, that [illegible] amusement of cranks, or a mild concession to [illegible] necessity to efficiency? It has been found that at the moment it [illegible] owing to the shortage of medical officers, to reappoint a doctor to the School. Very well, will you take an interest in our work investigate it in your spare time and send, or better still, bring me constructive criticism? Will you, Senior Officers impress on your superiors and contemporaries that as in the case of the Army, it is of vital importance that medical officers should be intimately connected with this work which in that Service is considered to be of first importance? That it is much more important in the Navy than in the Army which lacks their opportunities for exercise, and where length of service entails our responsibility from youth to middle age, instead of a brief five years is obvious.

If you will do this I feel that the interest of all medical officers in the Navy will not only allow the work to progress on oiled wheels, but will again provide me, when numbers permit, with a colleague or colleagues who will press forward for the bodily welfare of the Fleet and in no small degree the bodily welfare of the nation.

Discussion.

A discussion followed in which it was unanimously agreed that Captain Burnett's contention, that physical training and recreation were essentials for the physical well being, efficiency and morale in the Royal Navy, was justified.

It was observed that in the training service it was possible to see boys on parade or elsewhere, and to say 'that boy has been in the establishment for three or six months' this estimate being made on the appearance of health and improved physique resulting from his physical training and organized recreation and that it was obvious that the boys looked forward to and enjoyed their physical training class. The same enjoyment of a course of physical training was experienced by those medical officers who joined before the War and whose course of instruction at Haslar included six weeks instruction at the Physical Training School. Further comment suggested that it was a psychological fact that much of this pleasure in physical training in the case of both boy recruits and medical officers was because they had an obvious objective which was obtained by the physical training—it might be that the only objective was the avoidance of other less attractive classes, in the case of physical training in sea going ships such objective was missing in the case of the majority of trainees and that as a result physical training was looked upon as part of the routine ships duties the introduction of an obvious objective was a necessary item for efficient effort such objective might well be organized games.

Further questions were asked as to the possibility of remedial exercises. Captain Burnett replied that he was gratified but not at all surprised that medical officers had observed that the results of physical training were

apparent in as little as three months time and that this fact alone was sufficient to exemplify the importance of his specialism in the scheme of naval training.

He had not had the time to deal with recreational training but he had alluded to it as the corollary to physical training. He pointed out that at all possible times the entire recreational grounds &c., were fully occupied, he always regretted that more grounds were not available, but he hoped that in time these would be so increased in numbers that all ratings would have opportunity for games and that organized games which involved the entire ships companies would be recognized as an item in assessing the efficiency of a ship. He recognized the psychological necessity of an objective and agreed that the apparent objective should be games but that the real objective must always be fighting efficiency.

With regard to remedial exercises, he stated that he and his staff were fully prepared to carry out any remedial exercises advised by a medical officer, but that he made a point of refusing any such physical treatment without the request and concurrence of the medical officer concerned in the case.

CAN YELLOW FEVER SPREAD INTO ASIA?

AN ESSAY ON THE ECOLOGY OF MOSQUITO BORNE DISEASE.[1]

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The spread of yellow fever into Asia is a subject of such interest to all medical men who are engaged in preventive medicine, that I make no apology for bringing it up once more, especially as the danger has become so much more threatening with the development of air traffic and the increased speed and amount of mechanical transport in Africa.

To-day we realize the chief menace is that yellow fever may spread from its endemic home in Central West Africa to the coast of East Africa. Once in East Africa the nature of the sea borne traffic in this area of the world should offer little obstruction to the transport of the yellow fever virus into Asiatic ports. The trade in this area is largely by means of uncontrollable Arab dhows and coasting sailing vessels, as primitive in nature as ever were the old sailing ships which carried yellow fever across the Atlantic. This short sea route from East Africa is therefore of quite a different character from the Pacific trade routes, from tropical America to Asia, where the long sea passage is covered by large steamers under strict sanitary control.

[1] Modified from an address to the Conference of Port Sanitary Officers at Rochester, 1931, and reprinted in this Journal by permission of the Editor (*The Journal of Tropical Medicine and Hygiene*).

The local coastal traffic in the Mediterranean and Red seas also has a dangerous potentiality for carrying infection, and it seems to me that these sea lanes should be as easy for 'Yellow Jack' to travel by to-day as was ever the old 'middle passage' from West Africa to the Caribbean Sea in the past.

Elsewhere I have emphasized the consummate ease with which ships carried yellow fever from place to place in the nineteenth century (Dudley 1933), and to my mind the fact that yellow fever has never reached Asia by the Mediterranean route is in itself so remarkable as to make one suspect that there must be some other reason than lack of suitable mechanical transport for the absence of yellow fever from Asia.

(1) Asiatic Susceptibility

If yellow fever is potentially capable of spreading in Asia one can envisage a holocaust to which all the historical epidemics would be as the Battle of Waterloo was to the Great War, because there are four times as many people in Southern Asia as in the yellow fever areas of Africa and America, and the density of the population is ten times as great. Moreover clinical observation proves that the Asiatic has no racial resistance to the virus like the native African, and when residing in West Africa is just as prone to die of yellow fever as is the European. Asia moreover, is virgin soil for the yellow fever virus, as is shown by the mouse protection test devised by Sawyer and Lloyd (1931). By this test one can show a subject is immune from yellow fever by injecting his blood serum, together with yellow fever virus into a specially prepared mouse. The mouse's life is saved if the subject under test is immune.

By use of this technique it has been shown that there are no protective substances in the blood of native Indians (Mackie, 1932) and Chinese (Findlay, 1934).

(2) Dengue and Yellow Fever

The foregoing remarks make it appear that there is so little apparent hindrance to the mechanical transport of the virus of yellow fever to Asia, where the inhabitants are wholly susceptible to the disease, that it almost justifies the assumption that Asia can only have remained free from yellow fever up to the present because of some biological obstruction to the free spread of the virus on its arrival there. The most obvious explanation, if such a speculation was true, is that there is some biological difference between the American and West African strains of the same species of mosquito *Aedes aegypti* the yellow fever vector.

As evidence in support of this hypothesis, let us first contrast the geographical distributions of *A. aegypti*, dengue, and yellow fever.

The distribution of the mosquito and dengue practically coincides, and may be said to be continuous in the land areas of the tropical and sub-tropical zones; while, on the other hand, starting from the west coast of

tropical America, the yellow fever distribution stops at the twentieth parallel of east longitude, i.e. roughly on a line drawn vertically across the Mediterranean Sea, down the centre of the map of Africa.

Besides sharing the same insect vector, dengue and yellow fever cases can each only infect mosquitoes during the first two or three days of illness. The incubation period for both diseases is about the same, and last but not least, it has been conclusively shown that they are both transported easily from port to port by shipping. Dengue travels easily up and down the whole length of the Mediterranean and Red seas and some of the most extensive epidemics of dengue have taken place in Greece and Egypt. On the other hand while Portugal, Spain, and Morocco have suffered from yellow fever in the past it is doubtful if the vague accounts of yellow fever outbreaks at the eastern end of the Mediterranean can be accepted. In any case, yellow fever never maintained itself for long in that locality and failed to achieve the short passage from there into Asia, in spite of the fact that the prevalence of dengue in this area indicates that there was no lack of specific mosquito vectors and human hosts, and we know that suitable sea transport has always been available in this part of the world. Again, a study of the map of the geographical distribution of *A. aegypti* in Africa, combined with the nomadic habits of the Arab and many African races, makes it hard to believe that throughout all historical time the central highlands of Africa can have remained an impassable physical barrier to the passage of yellow fever to the east coast.

This contrast in the geographical distribution of dengue and yellow fever is consistent with the hypothesis that the races of *A. aegypti* east of longitude 20, while remaining good carriers of dengue, become inferior vectors of yellow fever.

Before leaving the subject of dengue one should note that the mouse-protection test gives no support to the suggestion that an attack of dengue protects against yellow fever since several investigators have found that the blood-serum from a recovered case of dengue contains no immune body to yellow fever (Findlay, 1934). Moreover, epidemics of dengue may run concurrently with yellow fever in the same place. This often happens in S. America to day, but a more interesting historical example of this phenomenon was without doubt seen in H.M.S. *Scout* in 1866. She picked up yellow fever and dengue at Tobago in South America, and both diseases spread as a ship epidemic, much to the confusion of the ship's surgeon (Dudley, 1933). Therefore, even should there be any cross-immunity, the presence of dengue in a district does not prevent the epidemic spread of yellow fever.

(3) The Efficiency of the Vector

Experimentally the Indian race of *A. aegypti* has been proved to be able to transmit the yellow fever virus from monkey to monkey in the laboratory. Hindle (1929), nevertheless, at first failed to do so when he used a technique which was successful in the control experiments, which were made with

West African mosquitoes which had been kept under the same conditions as the Indian insects He succeeded, however, in giving a monkey yellow fever when he emulsified the same Indian insects in saline, and injected them hypodermically In another experiment he did succeed in infecting a monkey by insect bites This animal was used twice to feed six Indian mosquitoes which had previously fed on a monkey in the acute stage of yellow fever The former animal died after these twelve mosquito bites Generally, only one or two bites from an African strain of *A aegypti* are sufficient to convey the virus

Therefore we cannot attribute the absence of yellow fever in the Orient to an absolute immunity to infection or to an absolute inability of the local potential mosquito vector to transmit the virus once infected, yet Hindle's experiments do show that the one Indian strain of *aegypti* which he employed was a less effective vector than the one African strain of mosquitoes which he used for the one strain of the virus in question Incidentally some dozen or so other species of mosquitoes have been proved to be potential vectors of yellow fever under laboratory conditions but as far as I know, with the exception of the one species to be mentioned below none has been proved to be able to initiate an epidemic of yellow fever in the field

Epidemics are curious things, but it is becoming more and more realized how an apparently trivial and insignificant difference in the parasite, human host, mode of transmission, or environment may account for the origin of an epidemic in one place and its continued absence in another

It is quite in accordance with the little we know about the spread of infectious disease, that the freedom of Asia from noticeable epidemics of yellow fever may be due to a difference, even a difference which is undetectable in the laboratory, in the carrying capacity of the Asiatic races of the yellow fever mosquito Of course, there is nothing more dangerous in medical and biological work than the drawing of general conclusions from only one or two so called crucial experiments Many races of *A aegypti* would have to be tested with many strains of yellow fever virus before it would be justifiable to conclude that all strains of *aegypti* from Asia and East Africa are inferior yellow fever vectors, as compared with races of the same species from West Africa and the New World but Hindle's pioneer experiments in this direction indicate such an investigation might be well worth the trouble and expense, especially now that an efficient vaccine can be used to minimize the almost unjustifiable risk that laboratory workers used to run in manipulating yellow fever virus

Even supposing that the escape of East Africa and Asia up to the present is due to the poor quality of the local potential insect vector, it by no means follows that if the environmental conditions should change in some way, the local species of *aegypti* would not become good enough to spread the disease In this respect the account of a unique epidemic in South America is most illuminating (Soper *et alii*, 1933) In 1932

[illegible] appeared in a certain valley in Brazil but no *A. aegypti* could [illegible] Field and laboratory investigation incriminated as vector [illegible] of mosquito called *Aëdes scapularis*. After a time the epidemic died out. In the absence of mosquito control yellow fever does not generally leave a district until the majority of the inhabitants have acquired immunity as the epidemic is stopped by the exhaustion of susceptibles.

The mouse-protection test has shown that yellow fever does not usually die out until 70 per cent. or more of the population have become immune. Nevertheless, after this unique Brazilian outbreak, which was carried by an abnormal mosquito vector, it was found that out of 412 people who were tested only 15 per cent., instead of the expected 70 per cent., had acquired immunity to yellow fever.

As the authors state, the disease in this case did not die from exhaustion of susceptibles, but from failure of the unusual vector, *A. scapularis*.

This insect, according to Shannon (1931), belongs to the class of suburban mosquitoes which breed in collections of water near to human habitations which they frequently enter, and in which they may remain for over twenty-four hours. *Scapularis* may therefore represent a step in the evolution of its fully domesticated cousin *aegypti* which only breeds in household water containers.

In passing, it is noteworthy that three years previous to this epidemic Davis and Shannon (1929) found *scapularis* was the only other Brazilian mosquito in addition to *aegypti*, among those tested, with which they succeeded in transmitting the virus of yellow fever by means of the bite of the insect.

The failure of *A. scapularis* to carry the epidemic to its usual extent may have been as much due to its difference in habit as to any difference in facility of transmitting the virus when opportunity offered.

Any difference in the Asiatic and American races of *aegypti* which have been postulated to explain Asia's freedom from yellow fever would have to be of a biochemical or physiological nature, because *A. aegypti* has the same fully domesticated habit throughout the whole of its distribution.

Analogy with this Brazilian epidemic makes it appear feasible that the virus of yellow fever may have been frequently introduced into East Africa and Asia, but after causing a case or two, or an abortive epidemic, disappeared again, owing to some degree of incapacity in the local vectors. On the other hand, the Brazilian experience is a grave warning that under certain circumstances a potential but usually an inefficient vector can spread yellow fever, and in the dense populations of some Asiatic towns, once established, the disease in spite of a less effective mosquito vector, might spread widely through Asia with an ever-increasing momentum. In such a case there is also the danger that even an otherwise abortive outbreak might allow an opportunity for some strain of the yellow fever virus

to adapt itself by mutation and natural selection to be spread as easily by the Asiatic race of *aegypti* as it was originally carried by the West African races

The great variability in the virulence of the viscerotopic strains of yellow fever virus and the ease with which they can be changed into the neurotropic virus by mouse passage, lend some support to this speculation

(4) The Origin of the American Vector and Virus

Carter (1931) maintained that the history of yellow fever, combined with the investigations of the Rockefeller Commission shows that yellow fever was introduced into the New World from West Africa The biological evidence alone leaves little doubt that Carter was right

Firstly, the African negro has an almost absolute immunity to *fatal* yellow fever Nevertheless the "unseasoned" negro appears almost as liable to *mild attack* as the European This has been noticed in America when epidemics of yellow fever have arisen among a mixed black and white population These contrasts in racial susceptibility are most suggestive that the African must have been in contact with the virus of yellow fever for countless generations during which period his high natural immunity to death from yellow fever was evolved by natural selection

Secondly as the ages passed and the natural resistance of its African host species grew, the virus would have had to increase its infective and invasive characters in proportion, in order to adapt itself to the changing environment (i e the increasingly resistant negro) otherwise the virus must have perished and become extinct At the same time the clinical severity of yellow fever in its place of origin would probably as time went on, tend to diminish, because the parasitic attribute of pathogenicity is in itself of no survival value to the species except in so far as pathogenicity is correlated with increased powers of multiplication or dissemination Hence the pathogenicity of the virus for the adapted African would tend to diminish, though becoming greater than ever for unadapted races of man The almost 100 per cent mortality which Asiatics and Europeans suffer to day when attacked by yellow fever in West Africa is consistent with this hypothesis

Still more striking are the historical accounts of the devastating epidemics which occurred just after the virus of yellow fever had been transported across the Atlantic epidemics which are believed to have exterminated the Carib race of Indians Such events nearly always indicate that a foreign unfamiliar pathogenic parasite has been planted on virgin soil

Thirdly there is the contrast to day between the virulence of yellow fever to Europeans in Africa as compared to America During the present century the average mortality of yellow fever in America according to Carter (1922) does not exceed 10 per cent In fact Carter was so struck with the relative mildness of American yellow fever during recent times,

as compared with the huge historical mortalities, that he was inclined to believe that the latter figures were grossly exaggerated by the milder cases having been missed But I would point out that a lot of these historical figures refer to total mortalities and are not *case fatalities* Further the many well-documented accounts of military and naval expeditions show that in some cases 50 per cent or more of the total strength of a garrison or ship perished from yellow fever There is no doubt, therefore, that the average lethality of the American virus has diminished since its postulated introduction from Africa On biological grounds the virus would be expected to adapt itself to fresh hosts of low resistance by loss of virulence, or else die out altogether

From what is understood of the mechanism of the inheritance of natural immunity, it is scarcely conceivable that within less than ten generations the European colonists or aboriginal natives of America could have appreciably increased their natural resistance to the virus of yellow fever On the other hand the time has been more than adequate for natural selection to have eliminated the most violent strains of the American yellow fever virus

To sum up The immunity of the negro to yellow fever death, the relatively low virulence of the American virus to day as compared with its virulence when first introduced, and with that of the present day African strains of yellow fever strongly support the contention that the virus of yellow fever was evolved in Central Africa in prehistoric times

There is also convincing evidence that the specific mosquito also arrived from Africa, subsequent to the voyages of Columbus To-day *aegypti* is still penetrating further inland from the coast in certain districts of America and Australia which is support for the view that the insect has been recently introduced there, while in Africa the same species is found in every village in the centre of the continent where the climatic conditions are suitable In the New World, *aegypti* is the only species of the subgenus *Stegomyia* which in Africa includes several closely related mosquitoes, an indication that the fully domesticated yellow fever mosquito was evolved in Central Africa

According to Carter (1931) there is no evidence of a recognized outbreak of yellow fever in the New World until one hundred and fifty years after its discovery, though there were accounts of what were most likely ship epidemics of yellow fever in West African waters during the period (Dudley, 1932) This fits in with the view that *aegypti* had to establish itself in the human habitations of the New World before any extensive epidemic of yellow fever could materialize

(5) The Ecology of Insect-borne Disease

Those who have followed this discussion thus far may ask How is it that if the West African yellow fever mosquito has succeeded in spreading throughout America in the last three hundred years, the same race of this

species failed to spread across Africa and into Asia during the whole of historic time."

Before attempting to answer this question it is advisable to consider briefly some points in the bio-economics involved in the emigration and spread of a species into new territory. The environment is divisible into "niches" which are occupied by one or more species of organism. In general a species is so closely adapted to its niche in the local environment that it is unlikely to be replaced by an alien emigrant race especially if the latter belongs to the same species as the former. Of course there are hundreds of instances where a more virile interloping stranger has supplanted or survived alongside the indigenous species, or perchance found an unoccupied niche in the new country which it could use without opposition from the native fauna. A good recent example is the successful colonization of European rivers by the Chinese mitten crab, *Eriocheir sinensis* (see *Nature*, 1934). A more hackneyed example is the baleful emigration of the cactus to Australia, which has devastated thousands of square miles of otherwise valuable arable land. But in general, for every successful emigrant species there are an untold number of failures. Moreover although a species may meet with temporary success, yet after a preliminary multiplication in the new environment it dies out again either as the result of exhausting its food supplies or owing to the subsequent appearance of new or unfamiliar natural enemies, or to some other cause which prevents the emigrant species from attaining a permanent ecological balance with the fauna and flora of its new habitat. The work of the economic entomologist on agricultural pests illustrates how rarely this balance can be attained in cases of insects. The agricultural pest plants or animals are to be considered as rare and exceptional species who have successfully adapted themselves to new conditions as for instance the crab and cactus just mentioned.

The attempt to control such foreign pests by the introduction of the natural enemies or parasites which had successfully kept them in check in their lands of origin, more often than not ends in failure. Hundreds of insects or "enemies" from all over the world may have to be tested out before one is found that can destroy or keep in bounds the pest plant or insect. And, even if a successful "biological control" is found it may fail to establish itself permanently and the 'control' insect may have to be continually re-introduced each time the 'pest' gets out of hand. (For examples *see* Imms, 1933.)

The recent work on the ecology of insects offers an explanation of some difficulties in the epidemiology of insect diseases. For example, why such Pacific islands as Fiji, Hawaii and New Zealand have remained free from malaria and anopheline mosquitoes in spite of an extensive and continuous fruit trade between these islands and the malaria infected ports of the mainland. The fruit trade is recognized as an almost ideal method of accidental mosquito transmission, therefore it is far easier to believe

efficient anopheline vectors must have been avoided over and over again in these Pacific islands but failed to compete with the local fauna, than to postulate that such insects have never been introduced

But because the event has not happened up to date it by no means follows that it will not happen in the future should conditions become especially favourable and the right species or race of anopheline mosquito arrive at the psychological moment During the last few years after resisting the attack for centuries, Barbadoes has been successfully invaded by *Anopheles albimanus* Ever since the days of Columbus this island has been in constant communication with the malaria-stricken ports of the Spanish Main and in consequence must have been continually importing human malaria carriers among slaves, pirates and war-worn sailors and soldiers, yet three hundred years had to pass before the first case of indigenous malaria was reported on October 18, 1927, and Seager (1928) a month later took the first anopheles from a Barbadoes swamp Thus at last a race of malaria vectors had succeeded in overcoming the local opposition of the native insects and in finding a niche adapted to their needs The Barbadoes experience supplies the explanation of the appalling malaria epidemic of 1867 68 in Mauritius For a hundred and fifty years after the occupation of the island by the French in 1715, African slaves and Asiatic coolies, hundreds of whom must have been infected with malaria parasites, were imported to work on the plantations in Mauritius These human carriers were, however, a source of no danger in the absence of established insect vectors Prior to 1865 Anderson (1918) says that Mauritius was "one of the healthiest resorts in the Southern Hemisphere,' but in 1865 an emigrant ship the *Spunkey*, landed a batch of Indian coolies Malaria broke out for the first time in the districts to which these coolies had been drafted By the end of 1868, 50 000 out of the 350 000 souls in this island had perished from malaria The epidemic then declined into a permanent endemic prevalence which caused an average of 5,000 deaths a year We see how well Mauritius exhibited the extensive malignant epidemic which so often characterizes the first appearance of a pathogenic parasite on virgin soil It is safe to assume that efficient malarial vectors were absent from Mauritius until shortly before the arrival of the *Spunkey* By the time of her arrival, however the vector had succeeded in obtaining a permanent foothold in the island and had spread to such an extent that when the *Spunkey* landed the batch of human carriers there was no lack of insect vectors to disseminate malaria far and wide throughout the island

The assumption that Mauritius had been free from anopheline mosquitoes until shortly before 1865 receives support from Kirk and Andre (1933) who state that Rodriguez another island in the same group as Mauritius, is free from indigenous malaria, although her population of 8 000 souls is chiefly composed of emigrants from Mauritius Though widely searched for, anopheline species of mosquito have never been discovered in Rodriques

Turning again to yellow fever, if there should happen to be any biological difference between the races of *A. aegypti* occupying East and West Africa and Asia, the eastward emigration of the West African races is most unlikely. Because, as has been explained above, if a niche is already occupied by an organism which is accustomed to it, it is improbable that a species from elsewhere will succeed in ousting the indigenous species, or even in sharing the niche, and still more improbable is it that a biologically different race of the same species from elsewhere will succeed in competing with the established local race whose vital physiological requirements must be practically identical with that of the would-be usurper.

For laying eggs and during the larval period of its existence the species *aegypti* uses a very restricted niche, namely, the water storage containers in human habitations. The West African mosquito found the niche, domestic water containers, unoccupied on its arrival in the New World or if occupied not in the possession of organisms with the same requirements as itself. Therefore the West African race of *Aedes aegypti* colonized the New World without much or any resistance from the mosquito fauna already present in tropical America.

In Asia and East Africa *aegypti* must have swarmed in the native water containers for eons prior to the discovery of America and even should the local races of *aegypti* in the East have originally evolved in and spread from the West, they may have done so long before the evolution of the yellow fever virus.

These are some reasons why it is improbable that the present day races of the West African yellow fever mosquito could spread into areas already occupied by other races of its own species.

The ecologists have taught us that there are many morphologically identical races of the same species which differ in some functional character; they may have different food requirements, mating habits or different degrees of resistance to disease. These so-called biological races are adapted to some often subtle difference in their special niche or habitat or in the general climatic and geographical environment.

The entomologist has chiefly studied the food preferences and mating differences of the biological and geographical races of the same species of insect, but the pathologist can instance many examples of racial differences in an animal's reactions to infection and disease. Good examples are the susceptibility of chinchilla rabbits as compared with other breeds, to streptococcal toxin (Pulvertaft 1928) and the existence of animal races who vary in their susceptibility to cancer. Incidentally the difference in liability of externally identical races of mice to mammary cancer has just recently been found to be associated with microscopical differences in the chromosomes of the dividing germ cells (Huskins and Heaine 1934). Again the agricultural geneticist has made the breeding of disease-resistant races of food plants almost a special profession. Geographical races in addition to such functional characters as determine strict biological races,

generally exhibit minor morphological distinctions. It is of interest in this respect that Hindle (1929) remarks that his India race of *aegypti* was less pigmented than his West African mosquitoes of the species.

Much ecological investigation has shown that "geographical" races of the same species often remain confined to their own district or niche and do not mix or at most only overlap slightly where the borders of their respective areas of distribution are contiguous. On the other hand "biological" races of the same species may occupy separate niches in the same geographical area. A species with such a world-wide distribution as *aegypti* would be expected to be divided up into biological and geographical races. Therefore it might be a fertile field of research for a team consisting of an entomologist, biochemist and geneticist to see if they could discover any constant minor distinctions between strains of *Aedes aegypti* from Asia, East and West Africa, and America. The immunologist could then try and correlate such distinctions with the insects facility of transmitting the virus of yellow fever. I am unaware if any systematic work of this nature has been done with *Aedes aegypti* but Hackett (1934) in this respect has made most illuminating observations with regard to *Anopheles maculipennis* the common European vector of malaria. Hackett says "*A maculipennis* is not a homogeneous species but a collection of widespread varieties . . . in fact it was the striking anomalies in malaria distribution and intensity in Europe that led observers to postulate the existence of subspecies before they could discover any constant visible difference between them." In Holland *maculipennis* can be divided into two groups on the nature of hibernation, sexual behaviour, fat body development and choice of the salinity of the breeding pools. Only one of these groups distributes malaria efficiently under natural conditions, though both can act as malaria vectors for men under exceptional or laboratory conditions.

Hackett has now discovered certain races of *A maculipennis*, which though oft-times indistinguishable anatomically as adult imagines, can be separated by constant differences in the pigment pattern on their eggs. By this means Hackett has been able to distinguish at least six varieties of *maculipennis* whose biological differences . . . are such as preclude hybridization in nature" and who differ in the frequency with which they bite man *twice* (i.e. once to infect themselves, once to infect man) under varying conditions of the environment and thus their faculty to act as malarial vectors is determined by their environment and instinctive hereditary characters. Of the latter zoophilism is one of the principal factors in deciding whether or not a biological race of *maculipennis* is a good human malaria vector. One race may seldom attack man if domestic animals are in reach. Such a race would be an inefficient vector. Another race may attack man and other animals indifferently, it would be a more or less able disseminator of malaria according to circumstances. Whereas the most dangerous malaria distributors would be those strains if any exist of *maculipennis* which select man in preference to other mammals for the satisfaction of their blood lust.

Again it may be recalled that for a long time the rat-fleas, *Xenopsylla cheopis* and *X. astia* were considered to be the same species. The entomologist then noted many differences between them and there is now an abundance of evidence which goes to show that the relative immunity of Ceylon and Madras to plague, as compared with other parts of India is due to *astia*, the prevalent rat-flea in Madras and Ceylon, being a poorer vector of plague bacilli than *cheopis*.

Considering the evidence as a whole it seems by no means improbable that the Orient may have been protected up to date from yellow fever by its possession of a geographical race of *aegypti* with a different reaction to the virus of yellow fever than that of the West African races of the same species. If this be so, a rather quaint thought presents itself. Should some sanitary authority succeed in eradicating *aegypti* from Asia without at the same time interfering with the present system of water storage, this "niche" would be left vacant for the West African race, and the hygienist's nightmare, an Asiatic pandemic of yellow fever, ultimately become realized as a result of his own effort to prevent it. Fortunately, a piped water supply is the deadliest enemy of *Aedes aegypti*, and its institution the most practicable, if not the only way of combating this insect.

(6) Conclusion.

The above purely speculative remarks were only written in hopes of encouraging the biological outlook in medicine. They are not intended to influence quarantine policies in any way. Therefore I must conclude with a serious caution.

Even suppose it were true that Asia has escaped yellow fever up to the present because the biological setting has been unfavourable for the spread of the yellow fever virus: by bitter experience we now know what little things may upset the balance of Nature, and it is conceivable that an increase in the rapidity and amount of mechanical transport is the very factor which is wanting in order to compensate for a hypothetical inferiority of the potential local vector, or even to allow the West African races of the yellow fever mosquitoes to gain ascendancy over those races to the east of them and extend their range into Asia. Similarly, even if in the past our quarantine regulations may have been frequently evaded, it may well be that the extent to which they were and can be enforced has been the factor that has kept yellow fever from establishing itself in Asia or East Africa up to the present time. Therefore it is our professional duty as sanitary and ships medical officers to do all in our power to improve, encourage and enforce any measures which will hinder "Yellow Jack" in travelling east ward from his stronghold in Central Africa.

References

Anderson, D. E. (1916). The Epidemics of Mauritius. London.
Carter, H. R. (1923). Article in "The Practice of Medicine in the Tropics." Oxford.
Idem. (1931). The Early History of Yellow Fever. Baltimore.

[illegible] *Lancet* 1 803
[illegible] 143
[illegible] *Hyg* xxvii 47
[illegible]
[illegible]
[illegible] cxxxii 646
[illegible] London
[illegible] *Trop Med and Hyg* xxv
[illegible]
[illegible] 376
[illegible] *Hyg* liv 579
[illegible] 52
[illegible] xxxii 1
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THE MENACE OF YELLOW FEVER

BY A MEDICAL OFFICER OF THE ARMY

While [illegible] over the pages of the family Bible after the war I came [illegible] five brothers who had died in the '70s and '80s of the [illegible] yellow fever. Their ages were between 20 and 30 and [illegible] the only record of their deaths that exists for their graves in three [illegible] American republics are nameless and the consular records silent.

I could close these entries with the comfortable assurance that such a break-[illegible] the registry of deaths and in *pompes funèbres* as occurred in the [illegible] American epidemics could not again take place. At Bermuda, [illegible] inscriptions in the old yellow fever cemetery with something of [illegible] complacency—the nameless monuments to a stated number of [illegible] officers and soldiers of the garrison who were carried off by [illegible] in the middle of the nineteenth century.

There were some grounds for this assurance. Yellow fever was practically limited to Central and South America and to the West Coast of Africa, the incubation period rarely exceeds a week: the quarantine period, automatically imposed by long sea journeys, was enough to protect the areas where yellow fever was not endemic. Since that time the situation has been revolutionized by faster transport. At dawn on October 20, 1934 Charles Scott and Campbell Black left Mildenhall aerodrome in East Anglia at 23.12. On the 21st their Comet machine took off from Singapore and, after covering a total in fifty two and a half hours flying and a distance of 9,147 miles, landed at Darwin. A further stage had been reached in the breakdown of a great natural barrier to the spread of disease. Not only yellow fever, but virulent smallpox, cholera and plague may now be disseminated by aerial transport over vast distances.

Of these yellow fever is the most menacing. Infected mosquitoes may be carried in aeroplanes [9] passengers incubating the disease may be brought

[illegible] by the infected mosquito population (*Stegomyia fasciata* (*Aedes aegypti*)) stretching from Panama to the Indies and beyond, the animal reservoir (the [illegible] which only become infected over an equally extensive area) and finally the relatively small risk of direct contagion.

It is therefore not inappropriate to review some of the conditions which have arisen in former times through the spread of yellow fever and the occurrence of epidemics in hitherto uninfected areas. In the past, yellow fever has exercised greater influence on war than any disease since the time of Sennacherib. The loss of Louisiana, with its far-reaching consequences for France, has been ascribed to this cause—a political change of greater consequence than can be attributed to any other disease. This



statement is consistent with an infection which may produce 100 per cent mortality, and for which there was, until recently, no prophylaxis.

The development of whole countries has been retarded by it. In Central and South America it produced havoc for centuries; nor was North America always free from it. Carter [2] attributes 4 044 deaths in Philadelphia in 1793 and 2 086 in New York in 1798 to yellow fever. About 1728 yellow fever was brought to Barbadoes from Martinique by H.M.S. *Lynn*, Martinique was itself reinfected ten years later by infected mosquitoes carried in a French merchantman registered at Marseilles and coming from St. Jean d'Acre.

Yellow fever disappeared from Cuba in 1655, but the island was reinfected in 1761 from Vera Cruz and the epidemic then attacked the British troops under Albemarle and Pocock who were investing the city of Cabanas. In

Septemb[illegible] 1853 an expedition under Duke left England with 2,500 men but had to return in July, 1854 with the loss of 750 men and with its object unachieved The ships had touched at the Cape Verde Islands and had become infected with yellow fever But the most dramatic picture of the ravages of yellow fever may be found in British naval returns, and more especially in a report made in 1847 [1] This report covers a period when the suppression of the slave trade was keeping a number of ships in African waters and the resulting mortality from fever was causing some concern to Sir William Burnett and others at the Admiralty Indeed in 1831 an order had been issued that no liberty-men might land on the West African coast and this order was still in force in 1847 though ships were sometimes on this station for five years Wooding and watering were carried out by Kroomen so that ship's companies were rarely ashore except when hostilities arose However, the loss of life continued, and has been attributed by Dudley in a critical review [3] to yellow fever

The mortality can be appreciated from the random items which follow —

H M S *Eden*, Summer, 1829 ' The whole of the officers with the exception of one lieutenant and the gunner are either dead or confined to bed the men are dying almost daily amidst incessant rain and frequent tornadoes the main deck is crowded with sick and is constantly wet ' The surgeon and two assistant surgeons were already dead Out of the ship's company of 160 officers and men, 110 died that summer In the following year the mortality from all causes in the squadron of eight ships reached the figure of 113 per thousand The *Black Joke* the appropriately named tender to H M S *Sybille*, was almost unmanned by death

In June 1837, a new surgeon joined H M S *Buzzard* to replace one who was dead, there were 25 sick and 20 more were added in the course of a few days

In H M S *Bonetta* at Accra in January, 1838, the assistant surgeon sickened and died, another joined next month and reported ' The Commander Master, assistant surgeon purser, and 28 seamen and marines were all lying about the deck in the most helpless and melancholy state 3 with black vomit and to all appearances beyond aid

In 1838 in H M S *Waterwitch* at one time there were only three white men left to do duty on deck

At Ascension on March 3 of that year a sale was held on the beach of the effects of deceased officers of H M S *Forester*

In H M S *Alert* in October 1844, fever broke out on board, the only M O died, and she proceeded to Sierra Leone where nearly all the officers and the greater part of the ship's company were sent either to sick quarters or to hospital

H M S *Eclair* arrived on the station in February, 1845 In July, 13 cases of fever developed and six died Next month she called at Goree for coal but was refused pratique The coal was, however, supplied in

boats which were towed off from the shore and left at a short distance, to be taken alongside by her own boats they were then allowed to drift—too many places had been infected by Her Majesty's ships for risks to be taken The epidemic continued on board and the record of how seven successive medical officers were appointed to her between July and October 1845, of how six developed yellow fever and of how four died, is worthy of a better memorial than an official report can provide

Such was the situation in the Navy when stationed off an infected coast in the middle of the last century It was a contingency liable to occur until, in 1901, the mosquito vector of yellow fever was discovered and steps were taken to clean out the chief foci of the disease It is a situation which may arise again if yellow fever is carried across Africa and thence to India

The discovery made by Reed, Carroll and Agramonte was quickly applied in Havana in the form of an anti mosquito campaign The disease had held uninterrupted sway in the city for one hundred and forty years, but before the end of 1901 it had been abolished The total period required for its elimination in this case was ninety days Gorgas met with equal success in Panama and made the construction of the canal possible after repeated failures

The history of the campaign at Guayaquil, following the death from yellow fever of the American Consul's wife, reads like a romance [7] Few single deaths can have saved so many lives Other centres of infection on the Pacific coast had been dealt with in the meantime No longer are Masefield's words "Spanish port, fever port port of Holy Peter," synonymous west of the Andes

This change *was* made possible through the concentration of the population, human and mosquito, in the coastal plain and in ports where anti-mosquito measures could be put into force, and between which the only means of communication *were* by sea *A aegypti* is a mosquito of urban habits, found only in and about houses, so that a campaign against it is easier than that against the malarial vector, which has sylvan tastes Aëdes delights in frequenting the low lying, hot, squalid, insanitary districts in the neighbourhood of the wharves and docks of large sea-ports and it is from these that it infects ships by accompanying returning liberty boats or stores

On the Atlantic coast of South America the problem was more difficult on account of the enormous and potentially infectious Indian hinterland, which acts as a reservoir On this coast again, however, there was the advantage that the main lines of communication were by sea and that quarantine could therefore be made an effective barrier How effective this barrier can be has been shown repeatedly in the case of the epidemics of typhus in Chile in 1919 1921 and again in 1933

The advent of air travel is altering all this The field with regard to the conveyance of yellow fever by aeroplanes has received considerable

attention and many of the measures proposed [4] [5] [6] have been given effect in the provisions for quarantine which now govern the air services operating across Africa

This aspect of the problem is one which makes a more immediate appeal to the Royal Air Force medical officer

The production of immunity by vaccines is another field of great interest and promise since the results of experiments by Sawyer, Kitchen, and Lloyd [8] were published in 1932 a considerable literature on this matter has sprung up Its technicalities though not its application, are not likely to come within the scope of medical officers in the fighting services

In this paper I shall therefore confine myself to a preventive method which has achieved fresh significance and which may yet have to be applied in new areas I refer to mosquito control in a yellow fever ridden urban district, and I shall take to illustration of this method the organization which may be seen at its best in Rio de Janeiro but which has been applied to all the larger Brazilian ports In 1903, two years after the discovery of the mosquito vector the 'anti-stegomyia campaign' was initiated in Rio Money and labour have been lavished in perfecting this great work and it stands to day as one of the most complete triumphs of hygienic organization to be found in the tropics

The Service for the prevention of Yellow Fever was seen in operation by the writer through the kindness of H M Ambassador and the Director of Public Health in Rio, facilities which are readily extended to medical officers in the South American Division

In curious contrast to the extremely modern and scientific work which it controls is the centre for the Yellow Fever Service It is housed in the former palace of the Marquesa dos Santos, a favourite of Dom Pedro I, who built it for her The interior is brilliantly decorated with frescoes, which, in harmony with the Emperor's mood, have a Rubens-like quality The floors of inlaid Brazilian woods are of extraordinary beauty, and themselves justify a visit Here are to be found the voluminous records, the map room, the financial department, the stores for the issue of equipment, the laboratory to which all mosquitoes are sent for identification, the museum, the library, and the offices of the administrative head

This building is the headquarters of an army of workers, which in the Federal district of Rio alone numbers 10 024 (1930) or one eighth of the strength of the Royal Navy The district is divided into departments for the purposes of mosquito control, a typical department contains upwards of 30 000 premises and is controlled by the yellow fever unit for that department this has its own departmental office, where its daily records are collected and analysed for transmission to the Central Office where its personnel musters each day and where its own permanent records are kept these are very complete and include the finger prints and photographs of every member of the departmental staff, whose work in private houses must at times expose them either to the temptation of, or risk of being

charged with, robbery In the departmental record room may be seen tables showing the expenditure of petrol for oiling pools the total incidence of mosquitoes in the department for each month of the year tables showing the commonest breeding places for mosquitoes the latter —abstracted from departmental maps which hang round the walls—are marked with flags at the places where mosquitoes are discovered There is a map for every month of the year so that a graphic record is constantly visible of the incidence of mosquitoes throughout a period of twelve months The staff of a department consists of perhaps 140 men who are divided into guards, chief guards and principal guards To each guard is allotted a certain number of streets and blocks of houses he is given a map of his area, coloured so that he can tell at once from the colour which road and houses he should inspect on any single day of the week The whole area must be covered in the course of a week Over every five guards is a chief guard while the principal guard supervises all the personnel of the district In final control is the M O H of the department He has in booklet form duplicates of all the maps of all the guards, so that when he goes out to inspect them he can tell, by looking at any map and noting the colour for the day, where he will find the guards for that department at work The M O H is provided with a yellow car and is accompanied by the principal guard On arrival in the area to be inspected he is met by the chief guard, who then joins the party and indicates the road where the men are working The actual house is seen at once by the yellow flag which is placed outside it Should the chief guard also be in a house and have therefore failed to meet the car his presence is indicated by a yellow and red flag placed outside By this system delays are prevented and a wide area can be supervised effectively each day On entering a house the cisterns drains vases filters &c are examined, the garden inspected for any collections of stagnant water and for empty tins and any such tins that may be found are perforated When this has been completed a yellow notice to that effect is pasted in the bathroom and the date and inspector's signature added The inspection is very thorough and is repeated weekly all gratings are lifted and samples of water are removed for examination for larvæ of mosquitoes Where any are found petrol is poured on the surface of the water For safeguarding larger collections of water, the plan of stocking with a small fish called piaba is adopted Cisterns which are inaccessible, or those in empty houses are sealed The guards receive a course of instruction and are issued with a book of directions they wear a khaki uniform, and are equipped with an electric torch a bent rod for lifting gratings and for stirring pools a can of petrol, a spoon for collecting water samples a glass jar for mosquitoes and larvæ and a booklet of various notices, which may be required for issue or posting in the course of their rounds Copies of these various publications have been sent to the library of the School of Tropical Medicine in London they are, however all written in Portuguese and have not been translated The guard has to keep a detailed record of

[illegible] number of tanks in each [illegible] his visit. Should [illegible] that any relaxation [illegible] stocking with fish he will draw the attention of the [illegible] office to the fact—a small aquarium is kept at the office for this purpose. In Rio in 1932, the guards worked eight hours a day and earned £[illegible] pounds) a month.

The roads are supervised by separate guards. These men are provided with a cask of crude petrol (cheap by-product obtained from Brazilian coal in Rio Grande do Sul) which they wheel round on a trolley, a watering can and a hose. They have to inspect the rain water drains and the manholes in the streets and their duties also include the cutting down of long grass which may grow at the edges of the less frequented bypaths and which may conceal tins or litter retaining stagnant water.

The cost of such a service is of course enormous, but the visits of yellow fever created such disorganization and panic that it has been reckoned to be well worth the attention and the treasure that has been lavished on this department of public health.

The popularity of the service and the measure of the appreciation it merits can best be estimated by witnessing the reception of an inspecting medical officer in a poor household in the more crowded district of Rio.

It is to measures such as these that the South American Division owes its immunity from yellow fever and that the cruisers at present in those waters do not make the returns which, in the case of H.M.S. *Eclair*, reached such epic proportions.

There can, however, be no relaxation of vigilance at any time. In 1928 the Brazilian authorities are said to have been lulled into a sense of false security; there may have been a feeling that too much money was being spent on the control of the mosquitoes in the Federal District of Rio and that the menace had been exaggerated. In that year more than a thousand deaths from yellow fever occurred in the capitol within a short space of time and Petropolis became once more a centre to which the wealthy fled much as in the days of Boccaccio, the microbists of Florence abandoned their plague ridden city.

REFERENCES

[1] Blyson, V. A Report on the Climatic and Principal Diseases of the African Station. 1847.

[2] Chesney, H. E. The Early History of Yellow Fever. Baltimore 1931.

[3] Dutley, S. F. Journal of the Royal Naval Medical Service. July 1933. xix, 161.

[4] *Lancet*. 1930. i. 191.

[5] *Ibid*. 1931. i. 318.

Ibid. 1932. ii. 1445.

[6] Sykes, F. Casual Wanderings in Ecuador.

Sambon, Louis Wm. and Fletcher, Leon. *Journ. Trop. Med.* 1934. iv. 34.

U.S. Public Health Report. 1931. xlvi. 1515.

A FEW HINTS FOR GONORRHŒA

[redacted]

[redacted] in the belief that my suggestions [redacted] the [redacted] prophylaxis of venereal disease may prove [redacted] interest The introduction of [redacted] is generally accepted as being of value in [redacted] the immediate venereal risk, and in fact they would appear to be [redacted] 100 per cent efficient *when used* The personal factor, however [redacted] [redacted] undoubtedly frequently advanced as an excuse for not having [redacted] that an efficient second or alternative measure which allows of its efficient application some hours after exposure has taken place is almost essential

Urethral irrigation with a weak antiseptic solution is probably the method most frequently recommended and employed as a prophylaxis against gonorrhœa and is certainly the one for which facilities are generally provided on board Consideration of the physical factors governing the implantation of the gonococci at the time of exposure would seem to justify the assumption that they are at first confined to the region of the meatus and the immediately adjacent portion of the urethra and it is reasonable to suppose that they remain so for some hours subsequently (I believe that an attempt has been made to prove this bacteriologically but the literature on the subject is not available as I write) There is thus the possibility that the method of irrigation may result in the transportation of the organisms into the posterior urethra, while the antibacterial properties of the solutions employed are never such as to effectively deal with those that may be left in position there This purely theoretical consideration tends to be borne out by the number of instances where gonorrhœa has appeared in ratings who were satisfied at the time that they had taken adequate preventive measures by irrigating the urethra on return on board The consequent loss of faith in the facilities provided is easily understood

Far better then that an attempt be made to kill the gonococci *in situ* Aqueous solutions of an adequate potency to ensure this would prove much too irritating locally and their effect on the urethral mucous membrane would probably be more harmful than beneficial Fortunately in glycerine we have a solvent which while it detracts but little from the antibacterial powers of the drug it is made to convey mitigates to a marked degree the irritant effect on the local tissues Protargol, 20 per cent in glycerine, has been employed in this short series with the following routine

In a lecture to the ship's company on the subject, an appeal was made to those ratings who on returning to the ship in the morning knowing that they have exposed themselves to infection without the protection of a condom to report to the Sick Bay at 'Turn To' The Sick Berth Attendant deals with each man so reporting and using an ordinary eye dropper places approximately a minime of a 20 per cent solution of protargol in glycerine

in the first 1 in to 1 in of the urethra The meatus is kept closed by digital compression with the solution in position for ten minutes urine is passed immediately afterwards It is important that the bladder should be full, or partly so at least as no anterior irrigations are employed or allowed No untoward effects are occasioned by the local application

In this ship, during the second quarter of the current year, some forty-seven ratings applied for and received this method of prophylaxis all of them having neglected to use a condom at the time of exposure Of these only one had subsequently developed gonorrhœa and in his case an interval of at least twelve hours had elapsed since the time of exposure which had taken place early the previous evening One other rating later developed syphilis, but it is not claimed for this method that it is a prophylactic against that disease Calomel cream is used in conjunction and the failure to prevent syphilis in this case must be reckoned against it, and not against the urethral application The maximum delay period up to which the method is effective is very difficult to estimate, but is probably from six to eight hours from the time of exposure, while it is still worth a trial up to twelve hours and more Like all other methods of prophylaxis, its efficiency is in direct proportion to the promptness with which it is applied

While experience on such a small scale must necessarily be inconclusive, the results obtained seem to indicate that the method warrants a further and more extended trial The obvious fallacy, in even such poor statistics as I am able to bring forward at this time is the uncertainty as to what proportion of the forty seven ratings so treated had actually encountered the gonococcus The only point offering enlightenment is the fact that the three months reviewed were spent in visiting ports where the incidence of venereal disease is notoriously high and it is probable that a large percentage of the women who associated with these ratings were infective That is but one more hypothetical assumption The empirical is unfortunately the inevitable substitute for the scientifically ascertained fact in dealing with such a subject

In conclusion it is not suggested that the method described equals the use of condoms for efficiency, nor is it designed to replace them (This point would always require stressing to any ship's company to which it is introduced) It would appear, however, to have a place as a sound secondary measure

(*Note*—The preparation of the solution may present a little difficulty at first The most convenient method is to employ a mortar and pestle, and add the powdered protargol slowly to the glycerine. A few drops of water at intervals facilitates the solution of the protargol)

[illegible]

[illegible] THE [illegible]

[illegible]

He that [illegible]

He that [illegible]

He that [illegible]

He that [illegible]

THESE ramblings [illegible] organize and marshal on pap[illegible] of [illegible] a subject of some professional interest In commencing [illegible] I point out two facts In the first place I am a smoker myself and perhaps [illegible] little prejudiced; secondly, I smoke cigarettes only, and therefore [illegible] of my remarks may be applicable to pipe-lovers

It has been my lot during my short career to serve both in civil and service life under a number of chiefs who are either non smokers or else are in the habit of gingerly producing clouds of fumes from a weekly cigarette when dining out I have at times been amazed at the attitude which these undoubtedly experienced gentlemen have adopted towards the wretched patient whom they consider to over-indulge in the habit in question How many times have I heard the order abruptly given? 'My man you smoke too much! You must stop at once In many instances such an order is given as a routine, and is as often as not quite unnecessary I venture to suggest that the medical officer in question, in most cases, does not realize what that order means to his patient, who has possibly been asked to accomplish a task which seems to him impossible I would not blame the medical officer, how can he, a non-smoker, be expected to understand the mental torture, the almost intolerable burden of self-discipline which he has placed on the shoulders of a man already ill, and now deprived of what may be one of his few comforts? Naturally in the case of a man acutely ill or where there are definite indications that to smoke would be unwise, it is necessary for the medical officer to prohibit But I believe that in the average subject *education* would be far more preferable than *prohibition* By education I mean advice on when where and how to smoke and the formation if possible of a 'Smoker's Timetable

Let us consider the question of the "heavy smoker" What exactly do we mean by this? Is not this a term which is in a large degree purely relative, and dependent not only upon each individual subject under consideration, but also upon the views held by each individual medical officer? I smoke twenty-two cigarettes a day never more and never less I do not consider this at all excessive, but I have frequently been warned as a "heavy smoker" by medical men holding different views Personally,

I consider over thirty five cigarettes a day heavy smoking but this is a number which is bound to vary to some extent in different individuals

Now supposing we are faced with a number of cases each presenting certain definite features which we feel are to some extent due to excessive indulgence in cigarette smoking. These cases can be roughly classified as follows and educated as described in no case need total prohibition be enforced, but moderation should be gently but firmly insisted upon —

The Gastric Type

This patient will probably present certain vague symptoms of dyspepsia he will complain of loss of appetite, perhaps some abdominal pain maybe constipation and his condition may even suggest an early gastric ulcer

Education.—This should be commenced by explaining briefly the theory of digestive juices in an elementary way He should be made to understand how smoke in the mouth will produce salivation which in turn stimulates a flow of acid fluid into the stomach, and how this acid may attack the lining of the organ itself if in excess and particularly in the absence of food to absorb it The following rules may then be laid down, to which the patient should have no difficulty in adhering, provided he understands why it is necessary for him to do so Such rules should have the effect of greatly reducing the daily consumption of cigarettes, and should not put too great a strain upon the individual

(1) Smoking before breakfast is strictly forbidden, and must always be banned

(2) Smoking during a meal is prohibited

(3) On no account should the patient indulge within one hour before any meal The correct time to smoke is after the meal

These three rules, simple as they appear, are of vital importance in these dyspeptic cases and I know by experience that their application brings about an improvement in the general well being of the patient

The Cardiac Type

Here we have the patient who suffers from tachycardia, and is a martyr to palpitation He is often a difficult man to deal with he so frequently believes himself to be suffering from heart disease Interrogation will usually bring to light the fact that his palpitations have a habit of occurring at night, and often keep him awake

Education.—(1) Smoking within one and a half hours before retiring must be banned

(2) Smoking in bed after turning in must be banned

The Respiratory Type

This patient suffers from chronic bronchitis to a certain extent; he has a morning cough and often fears he is tuberculous Naturally he inhales

[illegible] what habitual smoker does [illegible] To ask him not to inhale is [illegible] less, he does so [illegible]

[illegible] (1) Show him the [illegible] object lesson of inhaled and [illegible] smoke blown through [illegible] unfiltered air and let him see for himself the amount of nicotine which has been deposited after exhalation in both cases

(2) He must moderate the number of puffs inhaled whenever possible

(3) He should never smoke when out of doors or when walking or taking exercise Explain to him that fresh air is good for him, and when taken should not be polluted This rule will be of value in the case of the footballer who indulges in his fag at half time a frequent sight in the Service

The Nervous Type

This is the most difficult to deal with He presents all the features described in the other types to a certain degree and in addition, is irritable, jumpy suffers from attacks of vertigo and has a shaky hand His daily consumption of cigarettes is usually enormous

Education —(1) He must be induced to see reason and his daily consumption immediately reduced by half

(2) The preceding rules must all be enforced as regards time and place

(3) It may be helpful to point out to him what a "dirty smoker" he is. From this point he may be instructed to 'smoke cleanly he should throw away the half consumed butt from behind his ear and only smoke a fresh cigarette each time he should remove the nicotine stains from his fingers with pumice stone and should learn to allow the smoke from his lighted cigarette to flow away from his fingers and not over them

(4) A short talk on the subject of eyesight may be given and he may be advised to use a cigarette holder to avoid exposing his eyes to smoke I do not, however feel that any reference to toxic amblyopia should be made unless really necessary as it might initiate undue worry

I feel certain that the above elementary methods of education are of great value in dealing with these cases In the Service, where a man can indulge more cheaply than his civilian brother cases of excess are frequently met with We can stop a man's rum we can stop his leave but to stop him smoking is often beyond us therefore let us try to educate him to smoke sensibly in the interests of his health

THE EARLY HISTORY OF PLYMOUTH HOSPITAL

ADMIRALTY RECORDS, DOCUMENTS AND LOCAL RECORDS

COMMUNICATED BY CLIFFORD MAKINSON

In Plymouth and Devonport we read that in the [illegible] century the site of the Royal Naval Hospital at Stone [illegible] occupied by the remains of an extensive quadrangular group [illegible] and the [illegible] an abandoned abbey

[illegible] to the [illegible] rights of the late Henry Woollcombe, Esq [illegible] erection of the present hospital accommodation had been provided [illegible] sick and wounded [illegible] men in a building at the bottom of George [illegible] House—since [illegible] Almshouse

[illegible] March 14 1758 certain land at No Place with a house and [illegible] was purchased from Henry Fulcher Esq by the Commissioner for Sick and Wounded, for the purpose of a hospital

Information compiled by the Admiralty Librarian from records in the Public Records Office states that prior to the opening of the Royal Hospital the sick were accommodated in the hospital ship *Canterbury* commanded by Lieutenant Mainwaring

On November 20 1762, orders were issued to Lieutenant Mainwaring to pay off the *Canterbury* and remove the sick, this date coincides with that when the hospital was finally completed

In June, 1757 about 25 acres of land were purchased from Lord Mount Edgcumbe, plans for a hospital were drawn up, the building was commenced in 1758 first opened for the reception of patients in 1760 and finally completed in 1762 The buildings were then supposed to be capable of receiving 960 officers and men

A copy of the deed of conveyance from Lord Mount Edgcumbe to the Commissioners of the Navy dated June 11 1758, together with a sketch of the land conveyed, is kept in the Hospital

Plymouth Hospital was built on the block system and was the first specimen of a hospital in this country, with a limited number in each Building It was built by an architect named Rovehead and was far in advance of its time —(*Extract from a History of Haslar Hospital*, by Fleet Surgeon William Tait M B)

Of the ten blocks in which the general wards are contained Nos 1 and 10 appear to have been built last as an engraving which may be seen in the entrance hall of the Plymouth Municipal Museum, shows the hospital as it appeared before the construction of these two blocks the foundations of which are however clearly indicated

All the residences which surround three sides of the Square those built of brick in the west side bear the date 1762 whilst the stone houses on the east and south sides were not erected until 1806 —(*Extract from the*

[illegible] Compa[illegible] [illegible] [illegible] [illegible] [illegible]
Sick and Hurt Board [illegible] [illegible] [illegible]

Royal Naval Hospital

This important institution for the reception [illegible] in Hamoaze was first opened for the admission [illegible] The arrangements of the hospital at that time were [illegible] surgeon, a purser and steward, who formed a council [illegible] and direction of the Sick and Hurt Board. Since that period various changes have taken place in the establishment and in [illegible] Government was entrusted to an officer holding the rank of [illegible] Captain in His Majesty's Navy with the title of Governor.

The duties of the Governor of the hospital and Resident Commissioner of the Victualling Office at the port of Plymouth are now discharged by Richard Creyke, Esq., who resides at the hospital.

The site of the hospital is on a pleasant ascent rising from the water at Stonehouse Creek, which forms its northern boundary. The other sides are enclosed within the road to Stoke, the old road from Plymouth and the houses at the back of Fore Street. The area of the whole is about 24 acres, 18 of which are occupied by verdant lawn, which surrounds the buildings and forms a delightful place of exercise for the convalescent patients.

The entrance from the town is in Fore Street, where a subaltern's guard is constantly stationed. An avenue leads to the houses of all the principal officers, which have good gardens attached; opposite to these is the entrance to the hospital, with the Commissioner's and other offices adjoining. The hospital consists of ten buildings surrounding an extensive quadrangle, each containing six wards, every one of which is calculated to receive 16 patients, but in cases of emergency that number can be extended to 20. From this statement it will be seen that no less than 1,200 sick can be accommodated at the hospital at one time. In the construction of these buildings care has been taken to prevent the spreading of contagious diseases, as they are detached from each other, having no other communication than is afforded by a piazza which surrounds three sides of the quadrangle, and is an excellent substitute for the lawn as a place of exercise in unfavourable weather. Between the principal edifices are four smaller buildings, denominated pavilions; one of these on the north side is used as a store-room; in the other is the operating room and smallpox ward, separated from it by a stone partition.

The two pavilions on the south side are occupied as the cooking and victualling rooms. The centre building in the east contains the dispensary and dispenser's apartments; over these is the chapel on the first floor, which has lately undergone a thorough repair, and is now fitted up with becoming neatness. Divine service is performed here every Sunday, by the Rev. Mr. Birdwood, the Chaplain of the hospital, who also attends to

[illegible] wards requiring spiritual assistance Besides the [illegible] persons connected with the hospital the chapel is resorted to by [illegible] portion of the inhabitants of the town

The patients are conveyed at a suitable [illegible] of the tide in boats to a [illegible] landing place, which is constructed on the margin of the creek [illegible] landed they are examined by the medical officer on duty and if [illegible] are washed and clothed in hospital dress their own clothes being taken from them are cleaned and deposited in the storehouse until they are discharged Near this spot hot cold and shower baths, furnished with every necessary accommodation are kept in constant readiness At a short distance is the wash house and drying ground at the eastern extremity is the reservoir, from whence the whole establishment is supplied with water

The medical departments are filled by gentlemen of known character and abilities and the uniform care and attention which the patients receive from the officers and attendants in their respective situations while it forms the subject of pleasing reflection is frequently the means of speedily restoring the invalid to health, and to the service of the State

The vast national importance of this institution may be gathered from the following authentic statement From January 1 1800, to December 31 1810 no less than 48 152 seamen and marines were received at the hospital a very great proportion of whom were returned to the Service as effective men

Every department of the hospital is of the most complete kind and the whole institution is so ably conducted as to leave nothing to censure When the greatest philanthropist the world has ever produced visited this hospital the arrangements received his warmest commendation The approbation of a man who was not only the glory of his country but the ornament of the age, well deserves to be recorded as the highest eulogium upon this institution, and there is no room to believe that it has degenerated since the time of Howard Foreigners who visit this hospital view its excellent appointments and discipline with admiration, and while in many instances this is not free from a feeling of envy they justly regard it as a noble monument of national greatness and true magnificence

The Hospital Staff at this date consisted of the following —

Commissioner Richard Creyke Esq
1st Lieutenant J Symons
2nd Lieutenant O Newell
Physician Archibald Thomson, M D
Surgeon Stephen Love Hammick Esq
Dispenser Stephen Hammick Esq
Agent R Bedlock Esq
Steward J Kent Esq
Minister Rev Mr Budwood
Clerk Mr Kenst

ROYAL NAVAL BURIAL GROUND, PLYMOUTH

The R N Burial Ground which has an area of 2¼ acres, was originally a field named No Place the freehold of which was acquired in 1756.

In 1824 a portion of this field was set apart for use as a burial ground, and in accordance with directions contained in a Board of Admiralty Letter dated September 28, 1824 the Commissioner of the Hospital (R Creyke), issued instructions on November 15 1824, to the Agent of the hospital "to cause the corpses of all patients who may die in this hospital, to be interred therein in future"

The first burial took place on December 10, 1824

Prior to that date burials took place in Stray Park, or Pinfield (now built over) which was described as though lying in the Parish of St Andrew, in Plymouth, Devon is not parochial, but peculiar, as belonging exclusively to the Royal Naval Hospital at Plymouth When the burial ground at 'No Place' was opened, the Vicar of St Andrew retained his previous right to officiate at naval funerals and deputed the Chaplain of the Naval Hospital to act for him and received a fee of 1s 6d for each funeral

The ground was licensed by the Bishop of the Diocese in 1826, but has not been consecrated

1833 a further portion of the ground was allocated for burials and known as the new burial ground, but apparently for some time after this date cholera cases were buried in the old ground The total number of burials in the Naval Burial Ground was 3 076, the last being on May 4 1897 with the exception of Mrs Moore the wife of Staff Captain Moore who was allowed to be buried in the grave of her husband on October 6 1912

In 1859 a number of Turks (66) from Turkish Man of War were buried here

The establishment of the hospital was first laid down in 1763, and provided for the charge being vested in a physician R N , in accordance with the following Admiralty Letter dated August 25, 1763

Gentlemen,—Whereas in your letter of the 10th instant in return to our Order of the 28th June last for your reporting what new Charges have been brought upon the Public since the commencement of the late war with France, so far as relates to the Business under your management together with your opinion what parts thereof may be discontinued or reduced you have proposed to our consideration the following establishment during a time of Peace for the hospital at Haslar, viz —

One Physician at the present salary of £200 per annum

One Surgeon at the present salary allowed the first Surgeon of £150

One Assistant to him at 5s per day

One Steward at the present salary of £100 per annum, with a Clerk at £50 per annum.

[illegible] Chaplain of the [illegible] [illegible]
One Dispenser and the [illegible] £100 [illegible]
An Assistant to him at £
One Matron at £2 — One Cook at £12
One Butler at £20 — One Ferryman at £20
One Porter at £30 — One Plumber at 2s per day
One Barber at £20

With only such a number of labourers as the service may really require to keep such a large building in proper order at the rate of 5s a week each and the provisions of the hospital [illegible]

That the Royal Hospital at Plymouth, now made use of for the reception of Sick and Hurt Seamen, be established in the same manner as Haslar in all respects except the Ferryman

And that apartments be in like manner provided for the Physician, Surgeon, Agent, Steward and Chaplain, and that they be obliged to reside there.

We do hereby signify to you our approval of the establishments you have proposed as before recited for both the said hospitals and require and direct you to reduce Haslar Hospital and complete the Hospital at Plymouth (so far as depends upon you) to those establishments accordingly

Given, &c 25th August 1763,

Sandwich
Howe
Thos Pitt

Commissioners for taking care
of Sick and Hurt Seamen.

Little evidence exists to throw any light upon the condition of affairs at Plymouth Hospital during the early years of its existence. We know that it was controlled by a Council consisting of the Physician, Surgeon, Agent and Steward, under the control of the Honourable Commissioners for Sick and Hurt Seamen and Marines. A Letter Book commencing in 1762 contains copies of letters addressed to the said Commissioners, and affords sufficient evidence that life in the Hospital did not run altogether smoothly. At one time a state of war existed between the Agent and Steward and serious charges were laid before the Commissioners by one of these Officials concerning the nefarious practices of the other.

The arrangement referred to in Admiralty Letter of August 25 1763 continued until 1795 when as a result of an enquiry into the state of the Naval Hospitals at Haslar and Plymouth a Post Captain and three Lieutenants, R.N. were appointed to each of these hospitals in accordance with the following Order in Council dated July 3, 1795

At the Court [illegible]
the [illegible]

Present

The King's Most Excellent Majesty in Council

Whereas there was this day read at the Board a Memorial from the Rt Hon the Lords Commissioners of the Admiralty dated the 1st of this instant, in the words following, viz

'May it Please your Majesty

Having had under our consideration the state of the Royal Hospitals at Haslar and Plymouth and also the report made to Admiral Earl Howe by the Admirals Gardner and Caldwell assisted by Captains Nicolls and Domett of their observations during their visitation of the first mentioned hospital in consequence of His Lordship's Orders in the month of June 1794, We are of humble opinion that the forming some new Establishment consisting of a certain number of Officers of Your Majesty's Navy for the purpose of superintending the interior arrangement and economy of the said Hospitals would be a measure highly advantageous to Your Majesty's Service, not only by ensuring a proper attention to the Sick but by preventing in the most effectual manner the inconveniences which have frequently been felt from a want of proper discipline and subordination in the said hospitals We therefore most humbly propose to Your Majesty that Your Majesty will be graciously pleased to authorise the Lord High Admiral, or the Commissioners for executing the Office of Lord High Admiral for the time being, or any three of them to nominate and appoint such officers as may be found to be sufficient for the Execution of the Duties above mentioned and to form such Instructions and Regulations as may be necessary for their guidance.

The extent of the Establishment at each Hospital not to exceed One Officer of the rank of Post Captain and Three Lieutenants, and to make them the following allowances for their services viz The Captain a Salary of Five Hundred Pounds per annum and the Lieutenants a Salary of One Hundred and Thirty Pounds per annum each, in addition to any Allowances of Fuel &c made to Officers already accommodated within the said hospitals

As it will be highly expedient if such an Establishment should take place to ensure a constant attendance of the Officers so to be appointed at the said Hospitals We further most humbly propose to Your Majesty that Your Majesty will be graciously pleased to authorize the said Lord High Admiral or Commissioners for the time being to cause such Buildings to be erected either within the said Hospitals or contiguous thereto as may be sufficient for the accommodation of the said Establishment

His Majesty having taken the said Memorial into consideration was pleased with the advice of His Privy Council to approve thereof, and to order (as it is hereby ordered) that a new Establishment be formed for the purpose of Superintending the Interior Arrangement and economy of the

Hospitals at Haslar and Plymouth according to the proposal contained in the said Memorial and such Officers appointed as shall be sufficient for the execution of the Duties therein mentioned Subject to Such Instructions and Regulations as may from time to time be given them for their guidance by the Lord Commissioners of the Admiralty And that the said Officers be allowed the Salaries proposed by the said Memorial in addition to any allowance [illegible] made to the Officers already accommodated in the said Hospitals

And His Majesty is hereby further pleased to Order that such Buildings be erected either within the said Hospitals or contiguous thereto as may be sufficient for the accommodation of the said Establishment

And the Right Honourable the Lord Commissioners of the Admiralty are to give all necessary directions for carrying the same into Execution accordingly

STEPHEN COTTRELL

In accordance with this Order, Captain Richard Creyke R N was appointed Governor of the Royal Hospital Plymouth, July 15 1795

Governor Creyke received his Commission appointing him Governor of the Hospital on August 4 1795, and arrived at Plymouth on August 27

The Hospital service coming under the Commissioners of Victualling by the Act of 1815 the Governor of the Royal Hospital, Plymouth was also Assistant Commissioner of the Victualling Board at Plymouth Captain Richard Creyke held both these appointments

There is a manuscript volume written by Richard Creyke, entitled, Private Minutes and Memoranda relative to my situation as Governor of the Royal Hospital at Plymouth' in the hospital a diary kept without a break for more than four years The volume abounds in information concerning the hospital at the end of the eighteenth century

As previously stated Governor Creyke arrived at Plymouth on August 27, 1795 and on August 31 he made a complete survey of the hospital as the following extract from his diary shows —

The hospital has accommodation for 1250 patients There are five large square buildings on each side of the quadrangle, each containing six wards and each ward was originally intended to hold 25 cradles, but it was soon found out to crowd so many together and they have been reduced to 20 1200 are thus accommodated in the sixty wards and there are two cellars in the middle building No 8 which have been fitted up and occasionally used for the reception of men in slight cases—those 2 places will hold 24 each which makes up the whole number to 1250 Besides these buildings there are on each side two smaller pavilions—the first on the right hand side is the Labourers Ward and Victualling Rooms over which are 4 solitary cells intended for the confinement of Insane and Maniacal patients and the other contains the Dining Hall and Cook Rooms The first on the left hand side is the Steward's storeroom and the other is the smallpox and convalescent smallpox wards

Under the different buildings on the right hand side (exclusive of the 2 pavilions above mentioned) are the Beer Cellar, Coal Cellar the Masons and

Chapel Building in the Centre [illegible] the [illegible] the Dispensary storerooms and the Dispensers private apartments On the first floor in the Chapel Central Block [illegible] pensers Assistants and Matrons apartments On the upper floor and plumbers rooms, the matrons storeroom and the flock room

In the outer division of the hospital are the houses and gardens of the Physician Surgeon Steward and Agent behind them are the houses of the steward's clerk and agent's clerk and the washhouse—and also the bedding house.

Within the 2nd gate are on the left the porter's lodge and the agent's office and the receiving and fumigating rooms On the right hand the butler's room and the steward's office and further on the fire engine house, commonly called the "Dead House" because corpses are removed there from the wards in order to interment Adjoining are the Dispensers and Ministers stables Besides these buildings there are the Engine House for forcing water up to the top of the different buildings to supply the wards and the Reservoir for furnishing a back water to cleanse the common sewers

The last entry in the diary is dated October 31, 1799 but Governor Creyke (or Commissioner as he was called later) continued to hold office until 1826 and if he continued to perform his duties in the same punctilious manner as that indicated by the diary he must have been an altogether exceptional person Certain it is that during the four years in question he does not appear to have taken a single day's leave, and on only two Sundays failed to attend Divine Service in the hospital chapel (then situated in Trafalgar Block) once when he attended in the suite of H R H the Duke of York on a visit to Maker Camp and once when he was prevented by indisposition Unfortunately no later diaries have been found

Governor Creyke was buried in St George's Churchyard, Stonehouse, and the inscription on his stone reads —

"Richard Creyke for 31 years Governor of the Royal Naval Hospital, and Commissioner of the Victualling Office, Plymouth, who died December 4th 1826 in his 81st year

He was succeeded by Captain Sir James A Gordon, K C B, R N, on December 7, 1826

The Commissioners of Victualling being abolished in 1832 the appointment was re-named Captain Superintendent of Royal Victualling Yard, and the holder of this appointment had charge of the hospital down to April 1870 when as a result of a report of the Civil Commission appointed to inquire into the condition and organization of Naval Hospitals the Captains and Lieutenants of Naval Hospitals were abolished and the whole of the responsibilities and administrative duties devolved upon the Inspector-General who became the head of the establishment The first Inspector General to be in charge of the hospital was John Davidson C B, M D whose appointment dated from March 31, 1868, until March 31, 1873

(To be continued.)

Clinical Notes

TWO CASES OF THROMBO-ARTERITIS OBLITERANS

[illegible] Captain G. F. Symes, I.M.S., R.N.

Case 1.—W. D. [illegible] was admitted to R.N. Hospital, Plymouth, on May 27 [illegible] pain and bed of the left great toe and pain in the left leg [illegible]

Case 2.—This patient was in R.N. Hospital, Plymouth, for one [illegible] from frost-bite and enteritis, he was discharged to twenty [illegible] this leave he suffered from pain in his right leg [illegible] in October, 1932, he complained of severe pain in [illegible] ankle at night. He stated that his left foot and [illegible] kept in a horizontal position. [illegible] on November 17, 1933, as a case of observation [illegible] treatment was discharged to duty on December 22.

Case 3.—This man was admitted to R.N. Hospital, Plymouth [illegible] pains in the left leg and foot and a septic condition [illegible] toe. He stated that the nail had fallen off three [illegible]

Case 4.—The patient complained of severe cramping pains in [illegible] of his left foot. When his left leg was kept in the [illegible] minutes his foot turned white and was pulseless [illegible] over the dorsum of the terminal phalanx of the [illegible] The left thigh and leg were markedly wasted. [illegible] No pulsation could be felt over the left femoral [illegible] femoral artery was palpable but was decidedly [illegible]

[illegible] depressed mental condition but this was accounted [illegible] the acute loss of sleep. [illegible] No evidence of abnormality. In [illegible] was found to be exaggerated, but no other [illegible] and no abnormality. Patient [illegible]

[illegible] dressings were applied to his left [illegible] of temperature. As his mental condition was [illegible] loss of pain and loss of sleep he was [illegible] to this he readily agreed. On June 9 [illegible] intercostal-lumbar joint. At the [illegible] found on operating upon a [illegible]

[illegible] stump, the thigh and the foot [illegible] It was [illegible] thighs owing to [illegible] the leg in a dependent [illegible] He was [illegible] to get [illegible] [illegible] was [illegible] implanted through the thigh. He [illegible] improvement [illegible] continued through the [illegible] third [illegible]

After [illegible] proved he had [illegible] much cramp [illegible] healed by [illegible] July 20 [illegible] completely changed [illegible]

The laboratory [illegible] femoral artery shows marked thickening of [illegible] which is very small, is filled with a partially organized clot

Case 2—S P, aged 32 was admitted to R N Hospital Haslar, on June 15 1926, with a diagnosis of neuritis of [illegible] and gangrene of the right little toe

History—The patient had been exposed to severe weather in his ship in April, 1926 and afterwards complained of tingling in the toes of his right foot He was sent to R N Hospital Bonchurch with neuritis of the right leg and a trophic ulcer between the two outer toes He improved and returned to duty but was readmitted to that hospital on April 28 with a recurrence of his condition After a minor operation (scraping the ulcer) the fourth and fifth toes of his right foot became gangrenous and he was admitted to Haslar

On admission to R N Hospital Haslar on June 15 there was gangrene of his fifth toe and commencing gangrene of the fourth toe There was marked wasting of the right calf as compared with the opposite side The patient was getting practically no sleep on account of the pain in the right leg and foot He found that the pain was eased by hanging the leg in a dependent position The toes were treated with various lotions and antiseptic dressing with no sign of improvement taking place On June 21 the condition seemed to have the fourth and fifth toes amputated, to which he willingly consented The toes were amputated through the metatarsophalangeal joints After the operation the patient's condition became worse and the foot commenced to swell only a very feeble pulsation could be felt over the right femoral artery

On June 24 amputation of the leg through the thigh was advised to this the patient readily consented and the leg was amputated through the lower third of right femur on the same day After this operation the patient's condition steadily improved He was able to sleep at night and his appetite returned The amputation stump healed by first intention and the patient was discharged from hospital on August 26

Pathologist's report The popliteal artery is completely occupied by a fibrous thrombus which has formed slowly There is much organized fibrous tissue through which there are small channels which are lined by endothelium giving a spongy appearance in the fibrin throughout The posterior tibial artery is affected in the same manner The veins are patent and there is no evidence of thrombosis

Comment—These two cases of thrombo-arteritis obliterans are recorded for the following reasons—

(1) The rarity of the disease in the Service

(2) The striking similarity of the symptoms in both cases

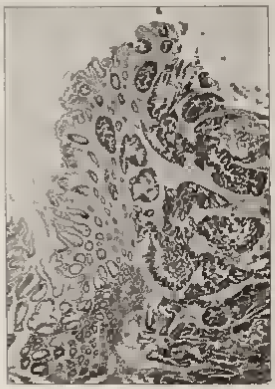
(3) That both cases presented the cardinal symptom of this disease, i.e. that keeping the affected limb in a dependent position eased the pain to a considerable degree

AN INTERESTING CASE OF CARCINOMA OF THE RECTUM

By Surgeon Captain H. J. R. Stephens, O.B.E., R.N.

On April 18, 1933, a patient aged 50, was admitted to the Royal Naval Hospital, Haslar from the Chatham station suffering from carcinoma of the rectum. The medical history of the case was typical and calls for no comment.

On April 25 a permanent left inguinal colostomy was performed. During this operation a mass of growth slightly larger than a tennis ball was felt at the lower end of the rectum below a piece of ballooned gut. The tumour was quite movable and did not appear to be fixed to either sacrum or prostate. No enlarged lymphatic gland could be palpated. The colostomy at once relieved the chronic obstruction from which he had been suffering and consequently his general health improved very rapidly.



[illegible]

On May [illegible] the growth [illegible] lesion. The [illegible] shows a [illegible]

Apart [illegible] from the [illegible] recovery which [illegible] from the Sick Berth [illegible]. A [illegible] was fitted and [illegible] He gained [illegible] of [illegible]

He was seen in late October 1934, about a year and a [illegible] after his first operation. He had gained more than 2 stone in weight [illegible] was extremely cheerful and said that he had never felt better in his [illegible] ear leaving hospital. He had dug through the clay soil of his garden twice [illegible] and he used a pick freely for making paths. He could eat and enjoy a full meal and could take a couple of pints of beer with anyone.

This case is quoted in order to draw attention to (1) The importance of performing a very radical excision in such cases. (2) The great improvement in general health following the relief of a chronic obstruction. (3) That a very happy life may be lived provided the colostomy functions well. Colostomy life is not always the miserable existence which some authorities would have us believe.

CYSTS OF THE LATERAL KNEE CARTILAGE

By Surgeon Commander J. A. Maxwell, M.B., B.Ch., F.R.C.S.I., R.N.

Mr. Rowley Bristowe [1], in an article upon this condition mentions only thirty recorded cases, but states that this figure is modernised in its frequency. In the Navy I have met four cases, and Surgeon Captain Cory informs me that he has seen two. Of my first case in 1927 I have unfortunately no notes. I remember that I dissected out the cyst from the cartilage, whereas the correct procedure is to remove cyst and cartilage together. Three cases have been operated upon in three years at R.N. Hospital, Malta, the last two by coincidence on one morning. The symptoms and signs in all were similar, and one description will suffice.

The complaint was of a small lump on the outer side of the joint, slowly developing over several months. In two cases its origin was ascribed by the patient to a direct blow on the knee, but this evidence is uncertain, and Mr. Bristowe states that no traumatic origin has been proved in other cases.

The swellings were associated with fatigue after exercise, and moderate aching especially at night. There was no history of locking or insecurity of the joint.

On examination, a grape sized cystic swelling was found at the joint level, neither inflamed nor tender, fixed upon the deep aspect but with the skin freely movable over it.

In each case the swelling was double, as though two grapes lay side by side along the line of the joint. There was no appreciable joint effusion, movements were full and free, except for slight resistance to full flexion. Upon extension the swellings were more and prominent, on flexion they tended to fade into the joint.

The last three cases were treated by removal of the cysts together with the lateral cartilages from which they arose. In the first of these some difficulty was experienced in closing the capsule after removal. In the other two this was overcome by reflecting back the capsule from the cysts with care, leaving adequate flaps.

A straight parapatellar incision was used in each case. All three returned to duty with efficient and painless knees.

Mr. Bristowe [2] suggests that these cysts are degenerative cysts, comparable to ganglia, arising in the synovial and extrasynovial laxity and areolar tissue as well as in the fibrocartilage. The myxomatous degeneration spreading through all the surrounding and supporting tissues, in one case, would support this view.

Trubrell Fisher [3] makes the following observation: "If we endeavour to explain why the external semilunar cartilage is almost invariably affected, the first thing that should occur to our minds is that this is the only cartilage that normally receives a partial covering of synovial membrane in connection with its

peripheral surface, this being at the spot where it is [illegible] tendon

The following are the Laboratory Reports from Surgeon [illegible] Saunder McIntyre at Bight upon my last two cases —

X, able seaman Aged 40 Growth from knee Macroscopically Multilocular cysts filled with gelatinous material Microscopically Non haemorrhagic and non inflammatory fibrocartilaginous and alveolar tissue in which cysts not lined by endothelial cells

Y able seaman Aged 32 Growth from knee Macroscopically Multilocular cysts filled with gelatinous material Microscopically Non haemorrhagic and non inflammatory fibrocartilaginous tissue with a considerable amount of myxomatous degeneration containing cysts not lined with endothelial cells

REFERENCES

1 Brit Med Journ Robert Jones Bell Lecture Vol p 269
2 C R Acad Sci Paris T p
Pinard Tissier Journal de Chirurgie Vol p 93

THREE CASES OF GONORRHOEAL ARTHRITIS TREATED BY INTRAVENOUS ANIMAL CHARCOAL

[illegible] Lieutenant Commander F R SORLEY MB ChB DPH RN

In the issue of February 24 1934 [1], there appeared an annotation in which I described a new method of treating infections from various causes The method consisted of intravenous injections of a suspension of animal charcoal in [illegible] Appreciatively the procedure was first suggested by Professor [illegible] of McGill College Montreal, who had studied the effect of intravenous [illegible] in a series of 738 animals suffering from infections of various [illegible] and that in all cases the animals so treated showed rapid recovery [illegible] intoxication exhibiting any ill effects

[illegible] work inspired his colleague, Professor St Jacques of [illegible] particular investigations in the infective conditions of man [illegible] and over a hundred cases of various infections by injection of a [illegible] suspension of animal charcoal and finally declared his results in a communication to the Paris Academy of Medicine [2] The results seemed to be very remarkable The infections which were treated successfully by the method included such widely separated conditions as furunculosis cholecystitis phlebitis gonorrhoeal arthritis epididymitis and post operative pneumonia Especially curative results were claimed in the gonorrhoeal complications

Being interested in the method I wrote to Professor St Jacques asking him for details of the treatment and the technique of injection In a very kind and courteous reply he wrote with enthusiasm about the method and without hesitation gave me much useful information Further, he contrived to have sent to me a sample box of animal charcoal prepared for injection

The preparation consists of a 2 per cent suspension of animal charcoal in distilled water and appears as a jet black fluid in which the finely powdered carbon particles can be seen clearly, especially when the fluid is shaken The preparation is contained in glass ampoules of 5 c c capacity

The following account of the indications technique and rationale of intravenous charcoal therapy is culled from Professor St Jacques letter and from his article to the Paris Academy of Medicine a reprint of which he enclosed

Indications Acute intoxications such as pneumonia and post operative bronchial infections phlebitis gonorrhoeal arthritis epididymitis and prostatitis cholecystitis otitis furunculosis

[illegible] for cases of severe [illegible] The dose can be repeated after [illegible] No [illegible] results are to be expected, either [illegible] [illegible] More than 200 injections [illegible]

Method of administration The injection is made [illegible] at the bend of the elbow It is recommended that [illegible] into the syringe, the piston and barrel should [illegible] liquid paraffin The needle should [illegible] being blown through its lumen Thus prepared [illegible] needle by the charcoal

Rationale of Method In animals [illegible] injection the liver spleen and bone marrow [illegible] the particles of charcoal from the blood [illegible] cells absorbed most of the particles Also the [illegible] blood were much increased in number [illegible] remainder of the charcoal at the same time [illegible] attacking bacteria Seemingly then the normal [illegible] the great centres of retículo endothelial [illegible] of the blood

Personal Observations Up to last [illegible] three cases of acute gonorrhoeal arthritis [illegible] records are as follows —

Case 1.—M H, aged 26 was admitted [illegible] April 13 1934, with profuse gonorrhoeal discharge [illegible] both knees of the right ankle and heel (probably [illegible] Achillis) and of the metacarpophalangeal and [illegible] middle finger On admission temperature [illegible] patient looked markedly toxic and was [illegible] even the slightest movement in bed caused [illegible] considerable wasting of the quadriceps and other [illegible] on the right calf muscles rendering the [illegible] heat to the affected joints together with [illegible] commenced The radiant heat reduced the [illegible] but made no difference whatever to the [illegible] The patient continued to run a [illegible] On May 1 it was decided to try the effect of [illegible] even more ill and toxic than on admission [illegible] reaction occurred On the following morning [illegible] improvement of the movements in all the [illegible] reached normal level for the first time [illegible] given on May 3 and by the following day [illegible] of pain and discomfort on passive movement [illegible] lost to a great extent, his toxic appearance [illegible] injections were given, the last dose [illegible] amazingly rapid and progressive On May 7 [illegible] exhibit good active movement of the affected [illegible] upon the edge of the bed and talk to his ward [illegible] had settled down to a layout between 98 [illegible] being able to move about slowly on crutches The [illegible] and swelling had almost gone some stiffness remained [illegible] restriction of movement was now due to the muscular [illegible] A period of less than fourteen days had seen the patient [illegible] racked, toxic man with the shadow of [illegible] one who was full of cheer and hopeful of complete [illegible] could take place A period of massage with active and [illegible]

waste [illegible] the patient was discharged [illegible] without [illegible] disability [illegible]

Case 2.—[illegible] aged [illegible] R.N. Hospital Bermuda [illegible] 1934 [illegible] slight swelling [illegible] the right ankle. He also had a purulent gonorrhoeal discharge. [illegible] admission 98.6° F. and pulse 84. Movement of the right [illegible] restricted. On May 7, the patient was given 3 c.c. of animal charcoal. [illegible] all swelling and tenderness of the ankle had subsided [illegible] second injection of 4 c.c. was given. By May 14 [illegible] about well on crutches, complaining only of slight stiffness [illegible]. He was discharged to duty on June 2, 1934.

Case 3.—L. C. [illegible] aged [illegible] to R.N. Hospital Bermuda on May 5, 1934, with a purulent [illegible] discharge. He complained of swelling and tenderness of the right [illegible] right ankle. There was also marked tenderness on palpation [illegible] of the sartorius, gracilis and semitendinosus muscles. [illegible] to be an associated gonorrhoeal tenosynovitis. Temperature [illegible] was 98.8° F. and pulse 84. The patient was confined to bed [illegible] was given 3 c.c. of animal charcoal. On May 9 he received [illegible] injection of 4 c.c. By May 11, all swelling and tenderness had gone from the right knee and ankle. Some stiffness only remained. Patient was allowed up and walked well without crutches. He was discharged to duty on June [illegible] 1934.

Comments.—The cases above recorded seem to support the claims of Professor St Jacques as to the value of intravenous animal charcoal in acute gonorrhoeal arthritis. Owing to lack of clinical material, I have been unable to give the preparation adequate trial in the treatment of other infections.

I am prepared [illegible] that in Cases 2 and 3 the improvement may have been due in some part to the patients' natural resources, since the infections were not severe. In Case 1, however, the criticism of *post hoc, propter hoc* can, I think, be eliminated, as the case was of great severity and the response to treatment was immediate and rapidly progressive.

It is possible that intravenous animal charcoal has before it a big future in therapeutics. At all events it seems promising enough to merit wide trial, particularly as no ill effects follow its use. The preparation is manufactured ready for injection by Laboratoires Poulenc Frères of Canada, Limited. The distributors are [illegible] of Montreal.

REFERENCES

1. [illegible] Lancet, February 21, 1931, p. 419.
2. [illegible] des infections variées par les injections intra-[illegible] Extrait du [illegible] de l'Académie de Médecine (Séance [illegible] No. 4).

A CASE OF PELLAGRA

[illegible] A. GLYNN, M.D., B.Ch., D.T.M. & H., R.N.

The patient [illegible] aged 35. He was born in an urban district of [illegible] the Royal Navy in 1913. He contracted syphilis in 1923 [illegible] in 1932. In August 1933 both the Wassermann [illegible] tests were negative. He completed a terminal course of [illegible] in January 1934.

Since September 1933 [illegible] serving in a ship on the South American Station. In September 1933 [illegible] Peru he had worked for two days as a member [illegible] waded in the sea with his trouser legs

turned up ov[illegible] and he was under [illegible]

On January [illegible] he was admitted to [illegible] with a papulo erythe[illegible] of the extensor surfaces of [illegible] contracted whilst work[illegible] He came under the [illegible] RN to whom I am indebted for the following description of the case Two days after reporting with his present complaint (the [illegible] rigors) the rash appeared on the face which became scabbed [illegible] In the course of the next week there was extensive desquamation from the [illegible] accompanied by a copious serous discharge through the [illegible] where on appearance of washerwoman's skin was noted The [illegible] there was slight pyrexia and he was placed on the sick list [illegible] insomnia and of a feeling of pins and needles in the skin [illegible] which have since persisted A fine papular rash also appeared on the [illegible] upper part of the trunk, which has now almost faded There was [illegible] of the skin condition to the neck On February 10 the [illegible] became dry and rough, with a slight serous discharge through [illegible] this has since improved On February 17 slight tremor of the [illegible] noticed, but no other change in the nervous system The patient [illegible] to occasional attacks of shaking or shivering which [illegible] tion Mental depression is not conspicuous or great [illegible] in the patient's condition During the past few days the [illegible] has been contraction of the skin which is restricting movements [illegible] of the arms to be held in slight flexion The patient has [illegible] with a vitamin plus diet (malt, marmite cod liver oil) and [illegible] injections Local applications have varied from simple [illegible] and ointments without affording any relief or improvement [illegible] of pellagra is tentatively suggested

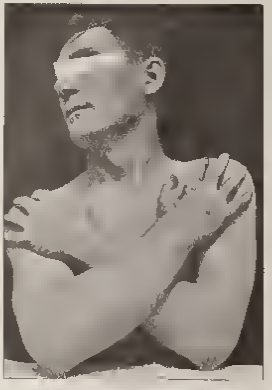
The patient was sent to the Military Hospital [illegible] to R N Hospital Haslar where he was admitted on March [illegible] and his skin condition was much improved The skin over the [illegible] The hands was still dry, thickened, and cracked the skin of the [illegible] and ceased the skin on the nose and cheeks was thickened [illegible] He never no gastro intestinal symptoms and [illegible] symptoms The condition showed further improvement and he [illegible] to duty on April 9 He went on leave and was careful to avoid exposure to light On April 29 however, he had an acute exacerbation of his [illegible] was readmitted to R N Hospital Haslar, on May 1

On readmission to hospital there was a [illegible] of the face neck, and dorsal aspect of both hands The skin of the [illegible] and swollen and there was some fissuring at the angles of the mouth The skin of the neck especially of the back of the neck and over the [illegible] processes was markedly thickened creased and desquamating The scalp was not involved in the erythema but showed free desquamation The skin of the backs of the hands and fingers was very inflamed thickened and showed [illegible] fissures The nails showed a marked furrow corresponding in time to the most appearances of the eruption The affected parts had a burning sensation which became intense at night The changes in the tongue were very slight The tongue was slightly swollen and showed indentations from the teeth the dorsum was slightly coated whilst the papillæ at the edges were red and prominent The breath in coma and the gums were normal in appearance There were no gastro intestinal symptoms There were no definite nervous symptoms reflexes and sensation were normal There was no lowering of the blood pressure Systolic 135 mm diastolic 95 mm

The patient was [illegible] not unduly depressed. There was no giddiness. He [illegible] at times that this feeling of queerness [illegible] and lasted for an hour or so.

The following [illegible] alone —

Blood count: White cells [illegible] red cells 1,670,000 per c.mm. Haemoglobin 8% per cent. [illegible] polymorphonuclears 47.5 per cent, lymphocytes 31 per [illegible] and transitional 6.0 per cent. Eosinophils 3.0 per [illegible] per cent.



May [illegible] of

[illegible]

[illegible] Sugar and [illegible] Wassermann

[illegible] positive skin [illegible] total acidity and [illegible] acid.

[illegible] on a vitamin diet [illegible] and given hydrochloric [illegible] He was [illegible] acid extract in addition [illegible] (Allen Mixed Diet [illegible] made B. W. and Co.). [illegible] applied to the skin lesions [illegible] tangent [illegible] These however [illegible] and on May 9 a fresh

area of skin of the front of the chest (cravat type) was affected. On July 1, the seventy-two days in hospital he was discharged to duty. At this time there was still some thickening and slight staining of the skin on the back of the hands and slight pouchy degeneration of the face and neck.

When seen a month later the patient stated that he felt quite well and the skin condition was much improved. There still remained slight thickening of the skin on the back of the hands and the back of the neck but there was no residual pigmentation.

Remarks.—The rash was very symmetrical and was confined to exposed areas. The first appearance of the rash on the face and arms was followed after an interval of three weeks by the involvement of the skin over the front of the legs in the area of the previous sunburn. During the resuscitaemes of the rash whilst in England, the lorea mis which were covered by clothing were not involved.

Though there were no subjective gastric or intestinal symptoms there was complete achlorhydria.

The appearance of the disease in a man who was receiving, and who had received, numerous injections of salpharsenol would discountenance the value of arsenic in the treatment of the disease.

The fact that one man in a community of 426 who were all living under similar conditions and were on the same ration of food would discountenance the food deficiency factor as the sole agent in the cause of the disease.

Though pellagra is endemic in South America, it was not (to Surgeon Lieutenant-Commander Keevil's knowledge) prevalent at any of the ports at which the ship touched. The weather was however, exceptionally hot. There were numerous cases of sun traumatism amongst the civil visitors to Puerto del Este. The ship's company though acclimatized and though sunburn had been made a punishable offence, continued to provide cases of sunburn of a minor degree.

A CASE OF ACUTE LYMPHOBLASTIC LEUKAEMIA

By Surgeon Lieutenant-Commander S. G. WELDON, M.B., D.P.H., R.N.

L. M., aged 19, was admitted to R.N. Hospital, Plymouth, on December 15, 1933, after six weeks' service.

He complained of having had a severe cold three weeks before admission and that this was followed by shortness of breath on exertion and general weakness and that he now got tired very easily. He also gave a history of having been vaccinated on November 13, 1933, and that this had resulted in a severe reaction.

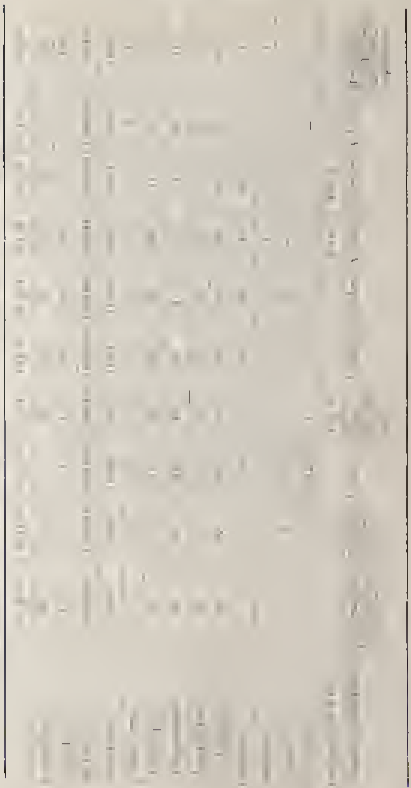
On examination the patient was well nourished, he had a slight cough with scanty sputum, his facies showed marked pallor but his skin generally had a slight lemon-yellow tinge. His tonsils were slightly enlarged. Liver, spleen and lymph glands were not enlarged. Heart a systolic bruit was audible over the aortic and pulmonary areas.

Blood-pressure, taken at intervals during his illness, gave the following readings: 120/70, 110/65 and 138/90 m.m. Hg. His knee-jerks appeared to be sluggish but otherwise no abnormal positive or negative signs were found in any system. No evidence of local sepsis or other cause of traumatism was found.

X-ray examination of his heart and lungs showed no abnormality. An electrocardiogram showed that the T waves were flattened throughout; there was no ventricular preponderance.

Ophthalmic examination: No gross changes in the fundi but the arteries appeared thin and the discs unusually pale.

Laboratory investigations gave the following results: Urine: A faint trace of albumin but no other abnormality. Blood urea was normal. Van den Bergh reaction gave a negative direct and indirect result. Wassermann reaction was



negative Blood fragility normal Coagulation time was eleven minutes fifteen seconds Bleeding time, ten minutes five seconds Sputum tubercle bacilli negative on repeated examination and on concentration Throat swab, no haemolytic streptococci were isolated Culture from vaccination crust grew staphylococci only Culture from stools gave a fair growth of coliform organisms and a few tetrads, there were no streptococci Blood culture was sterile

Blood picture At first the large mononuclear cells with round or oval nuclei and blue cytoplasm were thought to be myeloblasts, but on examining the smears with vital staining and making use of the oxydase test, to which the cells did not react, it was considered that they were lymphoblasts Blood counts which were carried out weekly, are recorded below The general blood picture, with the exception of the lymphoblastic resembles pernicious anaemia

The patient from the beginning was most cheerful and optimistic and did not realize the gravity of his condition he could not understand why he was kept in bed He had a slight but persistent fever (99° to 100 5° F) His pulse was regular but became gradually weaker and faster as the disease progressed He was kept strictly in bed and was given iron et ammon cit gr 90 daily with marmite and raw liver for ten consecutive days intramuscular injections of liver (Campolon) were added

On January 1 1934 he was given a blood transfusion (500 c c), and on the following day his general condition and colour improved though his blood count, on January 15 showed only a slight increase in the number of red cells and no change in the percentage of haemoglobin At this stage he developed a crop of skin pustules from which staphylococci only were isolated

On January 21 he had several rigors during the night, and on the following day the submaxillary inguinal and axillary lymphatic glands showed some enlargement

On February 1 pneumonical attacks of vomiting began and persisted for the next four days after which there was a slight improvement in his general condition

On February 5, he complained of pain in the cardiac region and attacks of palpitation which attacks increased in frequency during the next seven days until death took place on February 17 from heart failure

The case appears to have been one of acute leukaemia without any rise in the total number of white cells, combined with ac neute and rapidly progressive anaemia several of these cases have been described There was no response to massive iron and liver therapy and a very limited one to transfusion Unfortunately permission to hold a post mortem examination could not be obtained

Investigations did not throw any light on the possible cause of the condition, but the fact that it followed a recent vaccination with a severe reaction is of interest

Reviews.

THE PRINCIPLES AND PRACTICE OF NEUROLOGY By Alexander Cannon K C A M D Ph D D P M R C P (S Lond London County Council Mental Hospital Service and Edmund Dundas Trenchard Hayes M D D P M R C P (S Lond Deputy Medical Superintendent Northampton County Mental Hospital Assistant Physician Northampton General Hospital with a Special Chapter Examination by Professor C H Monrad Krohn M D, F R C P University of Oslo First Edition 1934 William Heinemann (Medical Books) Ltd, London Pp 338 + xx with 114 illustrations Price 25s net

The 'Principles and Practice of Neurology' is designed to be a companion volume to the 'Principles and Practice of Psychiatry' by the same authors

This book deals with clinical neurology [illegible] which it consists of the [illegible] The [illegible] Mr R Lawrie Reid M C M R C S [illegible] ophthalmology The [illegible] for the press will lead with neurological [illegible]

Part I consists of the [illegible] introduction [illegible] Professor Monnod Rabin [illegible] topographical and [illegible] pathological diagnosis [illegible] points out the [illegible] advantages of attempting to [illegible] topographical [illegible] lower) [illegible] that the [illegible] not only [illegible]

The general examination of the nervous system [illegible] thoroughly be begins with the cranial nerves and having completed [illegible] commends that [illegible] attention should [illegible] be paid to the [illegible] before [illegible] to the motor and sensory systems [illegible] X ray photo graph should always complete the examination of [illegible]

The motor system is dealt with in four parts [illegible] then the muscular system is followed by associated [illegible] examination and a [illegible] and diagnosis [illegible] at the end of the [illegible] showing the chief distinguishing [illegible] types of motor [illegible] paralysis or paresis of peripheral or [illegible] pyramidal or [illegible] [illegible] The clinical examination [illegible] appendix [illegible] into [illegible] sensory [illegible] with [illegible] neurophilography (b) electrical examination (c) examination of patient presenting aphasia or similar psychomotor disturbance The clinical examination is well described, easy to understand and although very complete is concise

Part II deals with diseases and each disease is dealt with systematically as follows [illegible] pathology signs and symptoms differential diagnosis prognosis [illegible] treatment The opening chapter describes convulsions and includes the epilepsies tetanus and tics all of these are particularly well done Chapter II deals with a series of "selected ungrouped nervous diseases" [illegible] the author place the vasomotor neuroses [illegible] erythromelalgia and myasthenia gravis Each succeeding chapter deals with a particular group of diseases and the relation of these diseases to each other is well brought out The last ten pages are devoted to a very brief account of some [illegible] diseases showing neurological signs and symptoms

The book is illustrated throughout by frequent excellent photographs and photomicrographs and [illegible] the reading of the text considerably

The authors of this work are to be congratulated upon making a somewhat difficult subject appear both interesting and easy Although the book is intended to be of especial value to those preparing for the Diploma in Psychological Medicine and the M D in neurology we think that it deserves a place in the library of any medical man as a book of reference for diagnosis and treatment of any neurological disease both common and uncommon

THE ETIOLOGY AND TREATMENT OF STAPHYLOCOCCAL BRONCHIAL ASTHMA By H Gordon Oliver M D With a Foreword by W Langdon Brown, M D, F R C P Regius Professor of Physic Cambridge University First edition 1931 H K Lewis and Co Ltd London Pp 18 + vii Price 3s 6d net

This small book is an admirable thesis on a controversial subject, and is worthy of careful thought by all concerned in medical officers The research work by the author has been systematically and scientifically carried out and the records of fifty cases with treatment and results are appended

The book is divided into two parts Part I deals with the various theories

taken [illegible] with the [illegible] aspect of the [illegible]

Part II deals with [illegible] to infection with [illegible] of a mycelic infection [illegible] put forward to explain [illegible] peculiar properties [illegible] certainly worthy [illegible]

HIGH BLOOD PRESSURE: ITS VARIATIONS AND CONTROL. By [illegible] M.A., M.D. Cantab. Member of the Royal College of Physicians [illegible] Senior Physician to Mount Vernon Hospital and to the [illegible] General Dispensary. Director of the Middlesex Rheumatism [illegible] Centre for Children; Consulting Physician to the Shenley Hospital [illegible] and Member of the Advisory Pathological Board. Consulting [illegible] to the Philanthropic Society's School, Redhill. Third Edition, 1931. [illegible] William Heinemann (Medical Books) Ltd. Pp. 281 with [illegible] including frontispiece. Price 10s. net.

In endeavouring to meet the needs of practitioners, teachers [illegible] medicine for whom this treatise is intended no effort has been [illegible] the subject matter in a simple concise and practical manner.

There are fifteen chapters in the book. The first two are [illegible] principles involved in the estimation of arterial blood pressure [illegible] various instruments employed for this purpose and the physiological blood pressure and its variations. The next seven chapters [illegible] and arteriosclerosis, and include full accounts of the causation [illegible] symptoms, diagnosis, prognosis, prophylaxis and treatment of these conditions. The last three chapters deal, respectively, with the arterial pressure in [illegible] losis, arterial pressure in relation to life assurance, and a short survey of [illegible] epochs in the clinical examination of arterial pressure.

A review should draw attention to any shortcomings that become apparent to the reviewer, and it is a tribute to the excellence of this book that we are [illegible] unable to find in it any serious defect. We would however like to see [illegible] alterations to be made in future editions to the description [illegible] manometer (aneroid).

On page 40 of the text the following statement appears: "In the use of [illegible] instruments care should be taken that they are not inclined since [illegible] leak of any interior balancing mechanism, different readings will be [illegible] the aneroid is sloped."

On page 43 is an illustration (fig. 12) showing a Tycos mercurial sphygmomanometer employed in combination with the auditory method. In this picture the aneroid, being suspended from a hook on the manifold, is obviously sloping at an angle.

On page 44 attention is drawn to the fact that the Tycos sphygmomanometer is unaffected by changes of temperature and pressure; no mention is made of the relative humidity of the atmosphere which we have found to have a marked effect on the readings of this instrument.

The book as a whole is a pleasure to read and it is with genuine regret that we put it down on completion. The print is large and clear and the illustrations are well up to the standard of the rest of the book. Not the least useful part of the book is a comprehensive list of 301 references. The index appears to be thoroughly satisfactory and does not suffer from the bogey of cross references.

We can thoroughly recommend this book as an eminently practical guide to anyone who seeks information about this difficult subject.

[illegible] By H [illegible] M.D. [illegible] F.R.C.P. [illegible] to St Thomas's Hospital Consulting [illegible] Hospital [illegible] Clinical Pathologist [illegible] Hospital [illegible] Edition 1934 [illegible] John Wright and Sons Ltd London: Simpkin Marshall Ltd [illegible] The Macmillan [illegible] Ltd Pp [illegible] Price 21s net

This well known [illegible] sixth edition [illegible] sufficient indication of its [illegible] appreciation [illegible] included the recent [illegible] and changed conceptions [illegible] have appeared since the last edition, and hence [illegible] sections have been rewritten

In spite of the [illegible] that it is a synopsis it contains an enormous amount of clearly given information We have interested ourselves in taking subjects at random and [illegible] the translation of the synopsis given into the more extensively [illegible] of the classical textbook with a success which has surprised us The preface to the first edition indicates those whom the author states he hoped [illegible]—the worried student whose final examinations are in sight—the [illegible]—the teacher and the examiner We can add from practical experience [illegible] ourselves who are at times so isolated that they are unable to [illegible] pretentious reference books in medicine, thus we confidently recommend [illegible] to the medical officers of the Royal Navy and to those [illegible]

The printing is [illegible] easily read though the pabulum is concentrated The shape and [illegible] the volume in its present form necessitates a desk or [illegible] stand [illegible] in the future the work will be published in sections—possibly enclosed for transport purposes in a single cover

An Introduction to Biochemistry By William Robert Fearon, M.A. Sc.D. M.B. [illegible] Fellow of Trinity College Dublin and Member of the Royal [illegible] Edition 1934 London William Heinemann (Medical Books) Ltd Pp 313 + x Price 10s 6d net

[illegible] volume [illegible] referred to in the preface as an elementary text [illegible] collected an enormous number of biochemical facts paying [illegible] in the realm of inorganic chemistry Much of the material, [illegible] from a purely academic point of view, appears to be of little [illegible] the problems of human physiology at least in the present state of our knowledge [illegible] example the fact that the metal cadmium has been detected spectroscopically in the liver of marine molluscs

The author [illegible] suggests that the presence of infinitesimal quantities of some of the [illegible] animal tissues points to a marine ancestry, since they [illegible] sea water

The chapter on vitamins is a useful condensation of the biochemistry of this important subject

The [illegible] on the [illegible] and protein structure lipoids and lipides, and that on [illegible] will appeal only to those whose knowledge of organic chemistry is [illegible] above the average

Although many laboratory tests and procedures are interspersed in the text the book is definitely not one for the clinical pathological laboratory, but may be recommended as a [illegible] book of reference

The author [illegible] to enliven his subject with many quotations from a wide range of literature including the Book of Tobit and the works of G B Shaw

Murray [illegible] Poisons [illegible] Hamill M D [illegible] Lecturer on Pharmacology [illegible] Therapeutics St Bartholomew's Hospital Medical College [illegible] Physician to the Metropolitan Hospital [illegible] Examiner in the University of London [illegible] Edition 1914 London H K Lewis & Co Ltd Pp 295 Price 5s net

This book which was intended originally for the 'Pocket Bag,' has grown with the years it is now equally suitable for more leisurely study Even the obscure poisons [illegible] more than a passing reference and the possessor of this volume should never be at a loss for the correct treatment in any emergency

It has been completely revised and reset in larger type and page, but the index in this respect is at fault, though its alternative nomenclature is very helpful in cases where there is a popular and also a scientific name for a poison

Broadly speaking it is divided into two parts the first of which is devoted to poisons in general, the composition of the antidote bag, courses of action to be adopted on being called to a case, general lines of treatment and outstanding symptoms by which the poison or poison group may be identified

There is a very good chapter on the medico-legal aspect of these cases and a straightforward paragraph on that very vexed subject the fee to be asked

The second part deals with a very complete list of toxic substances in alphabetical order further subdivided into acute and chronic poisoning, and including in its scope such conditions as alcoholism alkaloidal and vegetable poisons and the latest hypnotics

A very useful little book to have in an emergency

A Pathology of the Eye By Eugene Wolff, M B B S Lond F R C S Eng Ophthalmic Surgeon Royal Northern Hospital Ophthalmic Surgeon, Western Ophthalmic Hospital Pathologist and Lecturer in Anatomy to the Royal Westminster Ophthalmic Hospital Honorary and Late Demonstrator of Anatomy University College late Chief Clinical Assistant, Royal London Ophthalmic Hospital (Moorfields), and Ophthalmic Registrar University College Hospital Ophthalmic Surgeon to the Metropolitan Hospital and the Seamen's Hospital Albert Dock First Edition 1934 London H K Lewis & Co, Ltd Pp 383 + x with 125 illustrations, including 3 in colour Crown 4to Price 28s net

This is an excellently produced book, and will fill a long felt want for precise and illustrated information on a subject which is of great importance alike to the ophthalmic surgeon and the student seeking a higher qualification in ocular diseases The standard of reproduction of the photomicrographs on glazed paper is of first rate quality while the type, spacing and general finish of the book, make reading it a pleasure

It is now some years since a treatise on this subject was produced in English, so that in order to gain information it was necessary to either burrow among notes or consult a very large tome on general ophthalmology The price is high, but the production of 125 illustrations is very costly and the sale of copies must, from the nature of the subject, be limited

Spelling mistakes are noticed on pp 12, 16 and 90 while on p 27 there is a wrong reference to an illustration Punctuation is faulty in one or two places and there is a somewhat annoying tendency to repetition and cross references in the reading matter which it is thought could be improved upon These are very minor defects, however and detract but little from an otherwise faultless composition

In his preface the [illegible] states that the book [illegible] demonstrations given [illegible] during the last [illegible] at the Royal Westminster Ophthalmic Hospital. That it is intended [illegible] specials of which most students and ophthalmic surgeons find difficult to remember. He rightly points out that as the eye and its appendages are mostly superficial and transparent and also directly open to observation [illegible] that which is usually regarded as clinical ophthalmology really belongs to the Pathology of the living.

The general outline of the chapters is different from other works on Ophthalmology and their arrangement is not set order in the manner in which the various parts of the visual apparatus are dealt with. Eighteen chapters a most exhaustive bibliography and an index comprise the book. The chapters deal in turn with the Cornea, Conjunctiva, Lids, Lacrymal tract, Lens, Vitreous, Retina, Glaucoma, Sclera, Iris, Uvea etc. The last chapter is on General Pathology and is not necessary as much may still be said remarkable to the specialist that morbid processes can and do take place in parts of the body outside his province.

In connection with the Cornea, the author calls the book to the Argyll Robertson pupil and the fact that Dr. Adie's description of the nature of the unusual strictness of the sphincter pupillæ was originally published to. Surely it is time that all textbook took account of this very rapidly sweeping away the numerous inaccurate allusions to the original description.

On the subject of ophthalmia neonatorum the author draws a distinction between ante and post natal infection. It is assumed by some authorities that all infections must be post natal owing to the tight closure of the lids at birth.

Several of the ideas in the text are quite original such as the explanation of the [illegible] in the vulnerability of the macula, the conception of the spread of sclerosis [illegible] and the explanation of the mechanism causing unequal swelling of the nerve head in papilloedema.

Contrary to the general belief Mr. Wolff points out that in the miliary form of tuberculous ants the tubercles have no predilection for the periphery—the reverse of the signs of diagnostic importance between tuberculous and syphilis.

Of importance to the naval medical officer are the remarks on the formation [illegible] as a result of radiant energy and the reminder that between the initial [illegible] of the potash and the final coagulation and opacity there may exist a [illegible] latent period. Many cases of cataract come from abroad and the author [illegible] would steered that the [illegible] is due to the heat of the boilers, is often a matter of extreme difficulty for the expert to decide into which [illegible] opacity falls. The slit lamp in the early stages is invaluable but [illegible] of time prevents senile and traumatic degenerations tend to [illegible] appearances.

[illegible] is a coloured [illegible] of the lens showing its various zones and [illegible] which is remarkable to the one shown as fig. 54.

A case of [illegible] with a rise of tension and absence of neoplasm is described. The operator not long ago removed such an eye in the belief that it was [illegible] the only possible cause. No explanation was forthcoming on the [illegible] this is the first occasion that such an occurrence has been heard of as [illegible] makes mention of this very interesting lesion of ablation.

It is [illegible] to note that the author believes there may be a retinal [illegible] without a [illegible] statement which is not generally accepted but [illegible] generally believed.

In conclusion we congratulate the writer and publishers of this book on the production of a really beautiful and useful work of art and [illegible] ship.

Diseases of the Rectum and Colon and their Surgical Treatment By P Lockhart Mummery, M A, M B, B C Cantab, F R C S Eng, Senior Surgeon to St Mark's Hospital for Cancer, Fistula, and other Diseases of the Rectum, &c Second Edition 1934 Published by Bailliere Tindall & Cox 7 and 8, Henrietta Street, London W C 2 Pp 616 + viii, with 217 illustrations Price 35s net Postage 9d, abroad 1s 8d

The second edition of this standard work on the surgery of the rectum and colon has been published eleven years after the first edition During this period many advances have been made both in the diagnosis of diseases of the alimentary canal and in the means of combating them

A considerable part of this book has been entirely rewritten and several new chapters have been added

The first part of the book deals with diseases of the rectum and anus diseases of the colon have been placed at the end in order to facilitate reference to any particular condition The illustrations number 247, 90 of these being additional since the last edition

A new feature has been introduced by using photographic reproductions of actual operations to illustrate operative technique those depicting operations for cancer of the rectum are highly satisfactory

A new chapter has been added on precancerous conditions, as it has been recognized that these conditions frequently develop into true cancer Another most instructive chapter has been added on acute intestinal obstruction

This volume, which is easy to read and very well illustrated is certain to enjoy a wide popularity among general practitioners medical students and, especially, general surgeons

Surgical Applied Anatomy By Sir Frederick Treves Bart, revised by C C Choyce C M G, C B E, B Sc, M D Edin F R C S Eng Ninth Edition 1934 Cassell and Co, London, Toronto, Melbourne and Sydney Pp 720 with 174 illustrations Price 14s net

This well known medical classic, in reaching its ninth edition, conclusively proves its popularity with the student reading for his final examination in surgery It is a skilful summary of the essential facts of surgical anatomy Professor Choyce has made a complete revision of the text with many improvements especially with regard to the illustrations These now number 174 of which 66 are in colour

Illustrations of Regional Anatomy By E B Jamieson, M D, Senior Demonstrator and Lecturer Anatomy Department University of Edinburgh First Edition 1934 Edinburgh E and S Livingstone Published in five Sections, containing 203 plates, 137 coloured and 66 uncoloured Price 30s for the complete set postage 9d

These illustrations are "paraphrases" of the author's blackboard diagrams which have depicted his lectures on anatomy They have, for the most part, been drawn from permanent specimens and dissections

The illustrations are printed on one side of the page only and have been issued in five sections in separate covers on a loose leaf pillar system, in order that the plates may be taken out and pasted into a note book if so desired The sections comprise each in its own cover The Central Nervous System, The Head and Neck, The Abdomen The Pelvis and The Thorax Each of these regions is very fully illustrated and shows practically every naked-eye structure

The majority of plates are coloured and the paper used has been chosen with a surface that takes coloured chalks in order that the student may amplify the colouring if he wishes The drawings are beautifully reproduced and will be found of inestimable value to the student of anatomy

M

News of the Service.

ADMIRALTY ORDERS

2128.—Sick Berth Ratings—Advancement—Temporary Arrangements. REPORT

(N. 4040/34.—20/2/1935.)

To meet the existing shortage of ratings qualified for advancement in the Sick Berth Branch, it has been decided that as from 1st January 1935 the regulations governing the advancement of these ratings are as a temporary measure to be modified as follows:—

(1) All Sick Berth Petty Officers will be allowed to qualify for advancement after one year in the rating.

(2) All Sick Berth ratings will be eligible for recommendation on Form S.507 as from the date of qualifying.

(3) Sick Berth Attendants of the Portsmouth Port Division will be advanced to Leading Sick Berth Attendant on the dates when vacancies would normally occur by reason of other advancements of Sick Berth Petty Officers to Sick Berth Chief Petty Officer and three regulations numbered to position. This is on the understanding that the actual date numbers of Leading Sick Berth Attendants and Sick Berth Petty Officers must at no time exceed the combined Port Division numbers of the two ratings. (Although this arrangement applies at present to Portsmouth ratings only, it may be extended subsequently to Chatham and Devonport ratings.)

(4) This instruction will be reviewed on 1st January 1936 prior to being forwarded accordingly.

(5) It is drawn to the need for Sick Berth ratings to show their own interests to qualify for [illegible] with as little delay as possible.

2172.—Parkes Memorial Prize.

(C.W. 7432/34.—2/8/1934.)

The Parkes Memorial Prize, consisting of approximately thirty guineas in money with a gold [illegible] medal, is awarded to the writer of the best essay on the subject connected with [illegible].

The prize is open to the Medical Officers of the Royal Navy, Army and Indian Army [illegible] with the exception of the Professors and Assistant Professors of the Royal Naval Medical College, Greenwich, and of the Naval, Army and Air Force Leaders during their term of [illegible].

The subject for the essay for the 1935 Parkes Prize will be phrased such competitors being allowed to [illegible] subject dealing with Naval or Military Hygiene. All essays submitted will be judged [illegible] instant with the proviso that the subject chosen must have a direct bearing on Naval or Military Hygiene or on both.

Essays [illegible] to the Secretary of the Parkes Memorial Fund, R.A.M. College, Mill Bank, S.W.1, not later than 12th June 1935. Each essay to have a motto and to be accompanied with a sealed packet bearing a motto and containing the name of the Competitor.

The Committee reserve the right to withhold the award should in the opinion of the Adjudicators no essay attain sufficiently high standard of merit.

2347. Short Service Medical Officers—Transfer to Permanent List.

(A.W. 7011/34.—11/12/1934.)

The number of Medical Officers of the permanent list will be annually regulated so as to [illegible] an adequate flow of promotion to the higher ranks, but with due regard to the numbers [illegible] service officers desiring, to be transferred to that list. As soon as possible after 1st January 1935 Short Service Surgeon Lieutenants of 1933 seniority should report through the [illegible] whether or not they wish to be considered for transfer to the permanent list. After March 1935 applications for transfer will be considered together and the selections made will be promulgated in due course.

2. Should any officer wish to defer his decision the fact should be reported and any such request application for transfer would be considered when the following selections are made.

3. The same procedure will be adopted in respect of subsequent yearly batches and applications for transfer should be made at any other time.

(A.F.O. 1719/34.)

2388.—Character Assessments—Applications for Alteration

{N I 2957/34 —1 11 1934 }

A [illegible] of character may be varied only—

(*a*) if it is by reason of the length and quality of subsequent service the assessment has ceased to have effects which are unduly severe and could not have been foreseen at the time [illegible] paragraph 2 (*a*) below)

(*b*) when there is reason to believe that a character assessment which is lower than the highest which a recommendation could have been given under Art 605 (8) King's Regulations and Admiralty Instructions was not given advisedly (see paragraph 6 below)

(*c*) on the ground that the assessment was based on a fact the publication of which affected the assessment even unjustly and by enemy intelligence to its immediate effects (see paragraph 4 below)

2 An application for the removal of a character assessment on the grounds defined in paragraph 1 (*a*) above, if considered well founded may be forwarded only—

(*a*) on completion of 10 years service with continuous V G characters or

(*b*) within the last year before completion of time for pension

Except in very exceptional circumstances as [illegible] because of recognition given for an act of personal gallantry an application can be entertained when the character record during pensionable service includes an assessment below Very Good or worse than the assessment at the time

V G *(e.g.* one V G * and one Good)

3 An application for the review of a character assessment on the ground defined in paragraph 1 (*b*) above should be made as soon as possible and (except in respect of the final assessment on discharge) must be made before a man's discharge from the Service Any such application for the review of the final assessment of character on discharge can be considered only if appeal is made and discharge not within three months of the date of discharge

4 An application for the review of a character assessment on the grounds defined in paragraph 1 (*c*) above should follow the procedure prescribed for complaints in Art 49 King's Regulations and Admiralty Instructions Any such complaint should be made as soon as possible while the facts are still ascertainable and except in respect of the final assessment on discharge must be made before a man is discharged from the Service Any application for the review of the final assessment of character on discharge can be considered only if appeal is made within three months after the date of discharge and any man who expresses dissatisfaction with the assessment given on his discharge should be warned that any appeal to the Admiralty must be made within that period

2604.—Medical Officers—Applications to Accept the New Conditions of Service

{C W 9175/34 —29 11 1934 }

With reference to Part II A paragraph 15 and Part II B paragraph 10 of A F O 1110/34 Short Service Medical Officers entered before 1st May 1934 and Medical Officers on the permanent list with less than four years full pay service (excluding Civil Hospital time) on 1st May 1934 who have not already done so are required to report not later than 31st March 1935 through the usual Service channels whether or not they desire to accept the revised conditions of service in Part I of the Order

2605.—Colour Vision Ishihara Test Cards—Scrolloy

{N [illegible] C W 2604/34 —29 11 1934 }

As the Ishihara cards for the testing of colour vision are liable to bleach or fade if has been decided that all cards in use are to be examined at yearly intervals to see whether they have deteriorated to such an extent as to render them unreliable

3 The scrutiny of the cards will be carried out by the Ophthalmic Specialist attached to the R N Barracks Chatham This officer will forward each year to holders of the cards approved sets of Ishihara cards for retention and use On their receipt the sets of cards previously in use are to be forwarded to Chatham where they will be examined by the Ophthalmic Specialist These that are found to be unfaded will be returned as occasion arises, and those that have deteriorated will be condemned as unserviceable

OBITUARY

We regret to announce the following deaths which have occurred since the last issue and we tender our deepest sympathy to the relatives

SURGEON REAR ADMIRAL (RETD.) WILLIAM HENRY WELDEY (Retd.) who died on November 20 at Chart Lodge, Westerham, Kent, was a well known dockside character often met in restaurants. He was the son of Mr. William Weldey, of Wells, who himself was a member of the Naval Medical Service. He was born in 1858 and was educated at Bedford School and Dr. Lee's School. He entered Guy's Hospital from where he took the degrees of M.R.C.S. and L.S.A. in 1882. He joined the Royal Navy in 1883 and was appointed to the Victory at Haslar and made some short periods in small ships in the Channel, which he had varied experiences in, in addition to the ordinary routine of duty while at the Headquarters of the Royal Marines and was also lent to H.M.S. *Scout* for the Egyptian Campaign. On his return from Chile he served for some time on board the Flagship of the North American and West Indies Station, where he did duty in several ships. He again served at home time at the Royal Marine Depot at Walmer. In May, 1890, he was appointed to H.M.S. *Orion* in the Mediterranean and was engaged in the Naval Brigade at Suakim. He was promoted Staff Surgeon in August, 1896. He remained out there until 1899, when he was appointed to H.M.S. *Alexandra* being promoted to Fleet Surgeon in 1900. He served on the battleship again in the Mediterranean and followed this by commissioning the battleship *Victorious* in 1901. He was then appointed to H.M.S. *Indus*, the officers' training ship at Devonport. A year was spent in H.M.S. *Cambridge* and H.M.S. *Ingestre* and in October 1910 he was appointed to Chatham Hospital for duty in senior operating theatre, while acting there he was promoted to Fleet Surgeon in the same month. His next appointments were to Plymouth and Haslar. He paid off the latter ship when war broke out. In January 1916 he was appointed to the Naval Hospital, Malta. His last appointment was to Haslar, having been promoted to Surgeon Rear Admiral a month before remaining there until his retirement on April 1, 1918.

Retired Surgeon Rear Admiral Weldey was the recipient of numerous decorations and medals for his good work for the Service. In May 1919 he was awarded the C.B. and was gazetted to the rank of Commander on the 1st January, 1919. Admiral Sims recorded his appreciation of the good work done by him while the American Forces at Gibraltar and in July 1920 he received the Distinguished Service Medal of the United States with the Navy Cross. He also possessed the Legion of Honour and was a Commander of the Order of the Crown of Italy. In the same year he received an expression of Their Lordships' appreciation of his skill and ingenuity in connection with Wildey's syringe.

Wildey was one of the first in America to appreciate the opportunities afforded by the Naval Service for the practice of Surgery and he showed great ingenuity in the plating of leaden tubes of the proper form and thickness for the Fraenkel tube which was then used when the day came for him to give up and he found he had to undergo an operation for the removal of his own appendix. The writer remembers an occasion when the Surgeon Rear Admiral on being asked how happy he would be if he could be transferred to present us with a pair of pearl and polished. An opportunity was afforded him of doing so very shortly afterwards, and though he refused it, he was heard to forget the gentleness with which he handled the instrument—a gentleness which was so very typical of his whole character—the surgeon whom he was striving to help, the kindly encouragement which he bestowed on the nurses and all with whom he came in contact.

Wildey was a really fine artist and the fact was proved ably at great use to him in his surgical technique. Some of the sketches were published and he also made good use of his pencil and published several noteworthy articles on public and subjects. He was the editor of the surgical contents of the Official Naval Medical History of the War.

Of rather big proportions, he impressed all the capacity for affection which he undoubtedly had. Behind all he had a rather self effacing manner there was a fund of humour. Those who heard his speech at the dinner held on his retirement will not forget the delightful pleasure it gave to all present. On one occasion the writer congratulated him on some honour which had been conferred upon him. "Ah yes," he said, "but I would much rather be able to sing a good song."

He many gifted daughter of the late Fleet Paymaster in Chief William Hamilton and had one son and one daughter.

Those who knew him will not regret his passing

SURGEON COMMANDER ARTHUR PERCY STALDING (retd.) who died on September 10 1916. He was born in April 1880 and graduating in the qualifications of M.R.C.S., L.R.C.P. in 1901 entered the Navy in November 1902. After leaving Haslar in November 1903 he joined H.M.S. *Sentinel* where he served until February 1905 being then appointed to H.M.S. *Niger* and later in the same year to H.M.S. *Queen* there serving on the Mediterranean station. In April 1907 he was appointed to H.M.S. *Fisgard* where he served for the next two years. In 1909 he joined H.M.S. *Tamar* for duty in Hong Kong Dockyard and while there was promoted

to Staff Surgeon. On leaving H M S *Tamar* in 1932 he served in H M S. [illegible] until July 1916. In July 1916 he was appointed to H M S *Ark Royal* (for duty with R N A S Wing 2 on the Mediterranean Station) and in November of the same year was promoted to Fleet Surgeon. While serving in H M S *Ark Royal* Vice Admiral de Robeck conveyed his appreciation of, and admiration at, Fleet Surgeon Spalding's [illegible] in connection with an outbreak of plague. He brought into operation the Isolation Hospital at Mudros for the treatment of plague cases. After leaving H M S *Ark Royal* in September 1917 he served in H M Ships *Cinq est Ius* and *Harebell* until September 6 1918 when he was invalided from the Service at his own request.

Surgeon Commander Stewart Russell Johnston, who died at University College Hospital, London, on December 11 1934 at the early age of 41, had received his medical education at the same hospital taking the qualifications of M R C S, L R C P in 1916. He at once joined the Service as Temporary Surgeon Lieutenant, R.N.V.R., and continued to serve as such till May 1919 when he was demobilized to the Paymaster List. His first appointment was to Chatham Hospital and he then served in H M S *Constance*. Commissions in other ships followed and in November 1940 he was appointed to H M S *Cormorant* where he remained for upwards of eighteen months, he was then transferred to H M S *Grenville* in which ship he served for two years. Two pilots of ships aground preceded his appointment to the Royal Naval College at Dartmouth where he served with rest and addition until the time came for him to take the Promotion Course and subsequent examination. On completion of the Course he was appointed to the Boys Training Establishment at Shotley and there again his work met with such encouragement. Service in the Mediterranean followed and in September 1939 he joined H M S *Cumberland* on the North American and West Indies Station. In December 1939 he was appointed to the Physical and Recreational Training School at Portsmouth but he held the appointment for three years. In December 1932 the system of sending cadets for a cruise after their Dartmouth term was revived. H M S *Frobisher* was employed for the purpose and Johnston was selected as the Senior Medical Officer. His appointment was not often for a new branch but no-one's study illness prevented him from retaining it for very long. In September 1933 he was sent to the Royal Naval Medical School at Greenwich as Assistant to the Professor of Pathology and here to many friends rose the work with all his well known keenness. But all this time he was battling with the disease which ultimately caused his death, just what he thought will never be known to us. He never complained, in fact rather the reverse and to the end he bore him self with a fortitude which will be long remembered by those who knew him well.

His death is no recent one from some of us as mental it seems almost impossible to write in moderation of all his many qualities—and he undoubtedly had many. Any ally minded man he would have been the first to deprecate any definition of his talents which he used in all in the interests of his patients and the service which he loved.

He had a most attractive personality, and one of his most taking features was a delightful voice which always characterized the man when he was speaking. As a boy he was the possessor of a treble voice of more than ordinary quality and he later blended his voice to delight his listeners with his songs which were always produced in the manner so typical of him—with all concerned, without display, and solely with the idea of giving pleasure.

His professional attainments were of a high order. He took the first place in the examination for promotion in 1926 and was awarded the Gilbert Blane Medal. He was also one of the appointees of Sir Humphry Rolleston's Committee for services rendered in connection with Report of Vaccination (Ministry of Health).

In treating his cases he was the infinite patient to study the psychology of his patients and in this respect he was probably at his best when dealing with cadets. No one can ever hope to have a better understanding of the boy's mind and he was able to gain the confidence of those he had in a very marked degree. He took pains to learn all he could about them and anything he learned—and it was a great deal—he put to practical use. No one knew better than he when to admonish, encourage or chaff and it is likely that many of those cadets who passed through his hands have reason to be grateful to him.

He was a fine athlete and an games seemed to come amiss to him.

The Service can ill afford to lose such a man and it is infinitely poorer by his death. His loveable character will be an abiding memory for those who delighted to count themselves among his friends.

HONOURS

His Majesty the King has been graciously pleased to confer the following Honours:—

O B E (Military Division)

Surgeon Commander (D) W C Murray, L D S

TRANSFERS TO PERMANENT LIST

Surgeon Lieutenants Y J Belding, L R C I & S and A E Flannery L R C I [illegible]

RETIREMENTS

Surgeon Commander L W Gemmell M B Ch B placed on retired list [illegible] January 8 1934

Surgeon Lieutenant Commander H W Strong M B B Ch withdrawn [illegible]

PROMOTIONS

Surgeon Commanders H St C Clegg M B B S D P H E St C S Coolsain M D, B Ch D P H G D G Jorgusson M R C S L R C P and A F Mullin M B B Ch D P H, to be Surgeon Captains December 31 1933

Surgeon Lieutenant Commander P J A The O Rorke J R C I & S to be Surgeon Commander December 13 1934

Surgeon Lieutenant Commander D A Pettifer M B Ch M R A N to be Surgeon Commander August 8 1931

Surgeon Lieutenant S J Savage M B B Ch to be Surgeon Lieutenant-Commander September 9 1934

Surgeon Lieutenant H G Wells, M B B Ch to be Surgeon Lieutenant Commander, September 18 1934

Surgeon Lieutenant H S Meiler L M S S A to be Surgeon Lieutenant-Commander September 18 1934

Surgeon Lieutenant J W L Crosbie M B, Ch B, to be Surgeon Lieutenant-Commander October 18 1934

Surgeon Lieutenant I M McNamara M B to be Surgeon Lieutenant-Commander December 19 1934

Surgeon Lieutenant M J Brennan, M B, B Ch to be Surgeon Lieutenant Commander December 19 1934

APPOINTMENTS

SEPTEMBER

Surgeon Lieutenant Commander R R Baker M R A, B Ch to *Hermes*

Surgeon Lieutenant-Commander (D) W E L Brigland, L D S to R N Hospital, Hong Kong

Surgeon Lieutenant E Guy French, M B B S M R C S L R C P to *Hermes*

OCTOBER

Surgeon Captains L Weston O B E M B B S M R C S L R C P to R N Barracks, Devonport E MacEwan M R C S L R C P to *Queen Elizabeth* (and as P M O on staff of C in C and as Specialist in Hygiene) C V Gilfillan D S O M R C S L R C P to R N Hospital Portland H F Briggs, M B Ch B F R C S Ed to R N Hospital Cape of Good Hope

Surgeon Commanders W J Morris M B B S M R C S L R C P to Talbot R E Rumpling, M R C S L R C P to *Delhi* (and as Specialist M O on transfer of Flag) J A Mowell M B F R C S to R N Hospital Chatham in continuation (and as Surgical Specialist)

Surgeon Lieutenant-Commanders T F Barlow M R C S L R C P to *Carlisle* T G B Lawford M B B Ch to *Neptune* E V Barnes M R C S L R C P to *Berwick*

Surgeon Lieutenants J W L Crosbie M B Ch B to *Delphin* R S Lewis M R C S L R C P to *Hecla* J M McNamara M B—to *Duncan* (for 1st Destroyer Flotilla) D Ewart M B B S to R M Infirmary Deal

Surgeon Lieutenant (D) J G Benson, L D S to *Medway*

NOVEMBER

Surgeon Commanders A C Anderson M B Ch B to R N Hospital Haslar (and as G C Specialist) A C Shaw M B Ch B to R N Sick Quarters Wei hai Wei (and as M O in charge Wei hai Wei) J R Brennan M B Ch B to *York* in continuation (and as P M O on transfer of Flag)

Surgeon Lieut [illegible] R C Hunn, L M S S A, D M R, to R [illegible] specialist in Anæsthetics [illegible] D A Hoveaden M R C S L R C P [illegible] L M S S A to *Lowestoft* A K Stevenson M F, D O, to [illegible] Hotchkiss

Surgeon Lieutenant (D) R W Stevens L D S to *Ganges*

DEPARTURES

Surgeon Commander A I Tozer L M S S A to R N Barracks Chatham [illegible] M R C S L R C P to *Orion* (and an Squadron M O on transfer of Flag)

Surgeon Lieutenant Commander A K Ewart M B to *Tamar* [illegible] T A C [illegible] Ch B to H M Dockyard Devonport

Surgeon Lieutenant A H O Maher M B B Ch, to *Centurion*

ENTRIES

Messrs E D Caldwell M B Ch B L R C P & S I K Fraser, M B, Ch B [illegible] Glazebrook M R C S I R C I W A S Grant M B Ch B D T Lloyd M R [illegible] F James M B, Ch B M R C S L R C P R M Kirkwood M R C S L R C P [illegible] Rhys M R C S L R C P R F Stenhouse M B, C M and G D Weed F Ch [illegible] entered as Surgeon Lieutenants R N Invalid Source and appointed to R N Hospital Haslar (for course of instruction) September 20 1934

Mr R S Junkins L D S entered as Actin, Surgeon Lieutenant (D) on probation for six months and appointed to R N Hospital Haslar (for course of instruction) November 19 1934

Mr W J Walton L D S entered as Acting Surgeon Lieutenant (D) on probation for six months and appointed to R N Hospital Haslar (for course of instruction) December 3 1934

ROYAL NAVAL VOLUNTEER RESERVE

ENTRIES

Mr G L Fass B A B Ch entered as Probationary Surgeon Lieutenant List 1 Severn Division October 22 1934

Mr A V Griffiths M R C S L R C P entered as Probationary Surgeon Lieutenant List 1 Mersey Division (Headquarters) November 1 1934

Mr R F Hirtzel entered as Probationary Surgeon Sub Lieutenant List 1 Clyde Division October 1 1934

Mr M D Edwards entered as Probationary Surgeon Sub Lieutenant List 2 Ulster Division November 1 1934

Mr R P Phillips entered as Probationary Surgeon Sub Lieutenant List 2 Tyne Division November 9 1934

Mr S E Cooke entered as Probationary Surgeon Sub Lieutenant List 2 Mersey Division November 9 1934

Mr R V Tee as entered as Probationary Surgeon Sub Lieutenant List 2 Severn Division November 16 1934

APPOINTMENTS

SEPTEMBER.

Surgeon Lieutenant Commanders R R B Kebels, M B Ch B to R N Barracks Portsmouth T C Lackworthy B Ch M R C S L R C P to R N Hospital Chatham

Surgeon Lieutenants E G Twyman to *Effingham* R D Tejcum M B, Ch B to R N Barracks Portsmouth W H Cate M B Ch B to R N Barracks Portsmouth; I I Dyvor M B Ch B transferred from List 2, Mersey Division to List 2 London Division

Probationary Surgeon Lieutenant W F Jones M B, Ch B to R N Hospital Haslar

Probationary Surgeon Sub Lieutenants T H Plowe to R N Hospital Haslar I B W Hayward to R N Barracks Devonport

OCTOBER

Surgeon Lieutenants G J Murray M B B S to *Effingham* J C Livingston M B, B S, to R N Hospital Haslar E C Johnson M R C S L R C P to *Excellent*

NOVEMBER

Surgeon Lieutenant R Pedlow M D Ch B D P H, to R N Barracks Portsmouth

Probationary Surgeon Sub Lieutenant K E O Ringdahl to *Iron Duke*

PROMOTIONS

Surgeon [illegible]mmander W H Fullalove M A M D D P H and H E Hall M D B Ch B A O to be Surgeon Commanders December 31 1934

Surgeon Lieutenants R M Buchanan M B Ch B to be Surgeon Lieutenant Commander October 16 1934 A R Thelma to be Surgeon Lieutenant Commander October 17 1934 W T R Chapman M R C S L R C P to be Surgeon Lieutenant Commander October 29 1934 F T Dolleman to be Surgeon Lieutenant Commander October 26 1934 W M MacGregor M A M B Ch B to be Surgeon Lieutenant-Commander November 1 1934

Probationary Surgeon Lieutenants T H Pérez M B Ch B confirmed as Surgeon Lieutenant July 18 1934 W F Jones M B Ch B confirmed as Surgeon Lieutenant November 29 1932

Surgeon Sub-Lieutenant C M Lamott M B Ch B to be Surgeon Lieutenant April 23 1934

Probationary Surgeon Sub Lieutenants R T Jones confirmed as Surgeon Sub Lieutenant October 16 1933 I J Scott confirmed as Surgeon Sub Lieutenant July 11 1933 W S Miller confirmed as Surgeon Sub Lieutenant September 16 1933

RETIREMENTS AND RESIGNATIONS

Surgeon Lieutenant A C Howard L R C P resigned September 7 1934

Surgeon Lieutenant R H Wheeler L M S S A commission terminated on transfer to R A M C October 24 1934

Surgeon Lieutenant C G Batty Smith B Ch M R C S L R C P resigned November 2 1934

Probationary Surgeon Lieutenant P K Fraser M B Ch B commission terminated on transfer to R N Medical Service September 16 1934

Probationary Surgeon Sub Lieutenant W S Miller

QUEEN ALEXANDRA'S ROYAL NAVAL NURSING SERVICE

HONOURS

The King has been graciously pleased to approve of the Decoration of the Royal Red Cross Second Class being conferred upon the following members of Queen Alexandra's Royal Naval Nursing Service :—

Superintending Sister Arabella Reid
Nursing Sister Eleanor Irene Box
Nursing Sister Lilla M Ramsay

RETIREMENTS AND RESIGNATIONS

Nursing Sister Miss J K A Pelleu resigned September 15 1934
Nursing Sister Miss M M Gradon resigned September 22 1934
Nursing Sister Miss L Fraser resigned October 31, 1934

ENTRIES

Miss Lillian Lang entered as Nursing Sister on probation September 23 1934
Miss Sybilla Katherine Estelle Richard entered as Nursing Sister on probation December 8 1934.

APPOINTMENTS

Nursing Sister Miss L Lang to R N Hospital Haslar September 23 1934
Nursing Sister Miss I C Dithes to R N Hospital Haslar October 1 1934
Nursing Sister Miss H. McFie to R.N. Sick Quarters Similey October 8 1934
Nursing Sister Miss S K E Richard to R N Hospital Chatham, December 8 1934

NAVAL MEDICAL COMPASSIONATE FUND

[illegible] Meeting of the Fund, held on October 5, 1951, three cases were [illegible] and [illegible] voted to the applicants. The following is a summary of the cases relieved:

[illegible], aged 84, of a Surgeon who died in 1909. Has no income apart from the Old Age [illegible]. Voted £60. Total amount received from the Naval Medical Compassionate Fund at [illegible] awards £1,686 10s.

Widow of a Surgeon Lieutenant Commander who died in 1951. Assistance was sought [illegible] education expenses of two children. Voted £30. Total amount received from the Naval Medical Compassionate Fund at various awards £380.

Daughter, aged 8[illegible], of an Inspector General who died in 187[illegible]. Is dependent on grants from Charitable Funds and owing to infirmity is unable to earn anything. Voted £[illegible]. Total amount received from the Naval Medical Compassionate Fund at various awards £55[illegible].

DOMVILLE MEMORIAL GIFT

In March 195[illegible] the Trustees will elect a recipient for the Domville Memorial Gift, which is of the value of £6 yearly and tenable for three years. The recipient must be the child or children of a deceased Naval Medical Officer in necessitous circumstances and under 15 years of age at the time of election.

Applications, with full particulars of children, should be forwarded to the Surgeon Rear Admiral, R.N. Hospital, Haslar, not later than March 1, 1953.

REUNION DINNER

The eighth Annual Reunion Dinner was held in the Medical Mess at Haslar on October [illegible], invitations to which were sent to the retired medical officers residing in the district.

Besides the guests of the evening, the officers of the hospital were present, including the [illegible] of Surgeon Lieutenants under instruction.

In the unavoidable absence of Surgeon Rear Admiral W. W. [illegible], C.M.G., Surgeon Captain W. H. Edgar, O.B.E., was in the President's chair.

The following retired officers were present:—

Surgeon Rear Admirals: D. W. Hewitt, C.P., C.M.G.; [illegible] H. [illegible], M.V.O.; H. C. Whiteside, C.B.; R. H. [illegible], O.B.E.; [illegible]; R. J. [illegible], O.B.E.

Surgeon Captains: C. T. Baxter; G. T. Bishop, C.M.; [illegible] H. Bayliss; F. C. H. [illegible]; P. F. Alderson; J. C. Brogan.

Surgeon Lieutenant Commander: W. L. [illegible].

After His Majesty's health had been drunk, Surgeon Captain Edgar proposed the health of the retired officers and welcomed them back to Haslar. He [illegible] although the dinner was an annual event, the present occasion was [illegible] that for the first time for many years we have with us those [illegible] who collectively are known as a batch.

"These officers have already met some of us who are [illegible] an opinion as to what company they have fallen amongst. [illegible] should also meet the retired officers of the branch who have passed through [illegible] of the day and are now enjoying the fruits of their labours. [illegible] number of successful [illegible] standard of [illegible] achieving of [illegible]. One of the best [illegible] successful man [illegible] with goodwill [illegible] amongst us again [illegible] of all we heartily [illegible] and with that delightful [illegible] of Plato [illegible] hope [illegible] enable you to attend these reunion dinners for many years to come."

Surgeon Rear Admiral Whiteside replied for the retired officers and expressed the delight of all at being back at their Alma Mater [illegible].

Surgeon Rear Admiral [illegible] with a few well chosen incidents from his career, which he [illegible] spoken [illegible].

Surgeon Lieutenant [illegible] made a graceful speech in reply for the Surgeon Lieutenants.

The evening closed with a snooker match: Retired officers versus the [illegible] Batch.

KING EDWARD VII CONVALESCENT HOME FOR OFFICERS AT OSBORNE

Osborne House, East Cowes, Isle of Wight, formerly the Inland home of Her Majesty the late Queen Victoria, was given to the nation by H.M. King Edward VII as a Convalescent Home for Officers.

The house, which is situated on the Solent in an exceptionally beautiful park of 450 acres, was duly converted into a most delightful and comfortable convalescent home for the reception of convalescent officers, both serving and retired, of the Royal Navy, Royal Marines, Army, Royal Air Force, Royal Indian Navy and Indian Army, and also of the aforementioned Services, and in certain conditions both serving and retired Civil Servants who, owing to the nature of their duties, have to serve abroad.

A staff of fully qualified nursing sisters, masseuse, etc., is employed and special facilities are available for dietary, massage and electrical and light treatment. Medical attendance is free, but the use of special nursing or other special measures or special drugs is charged or made to cover the cost.

Massage, diathermy, ionisation, radiant heat, ultra violet rays and all electro therapeutical treatments are provided with a charge normally of 2s. 6d. per week.

The main portion of the house, however, is such as to eliminate as far as practicable the atmosphere of Service discipline and it combines all the advantages of a first-class convalescent home with those of a country club for those patients who, in the later stages of convalescence, require to make full use of the recreational facilities provided.

There is also its own private golf links within the grounds, about three quarters walk of the house, and the club which is second to none on the inland links, its own resident professional, two hard and grass tennis courts, a croquet lawn, bowling green, badminton court, a miniature rifle range, and also a private bathing beach on the estate. During the season there are also available for yachtsmen, and during the winter months the Isle of Wight hounds meet four days a week and fast beagles on two days. Officers may hunt with the latter pack free of charge.

Dances, entertainments, theatricals and dances are held throughout the year in the Queen's Hall, which is provided with a pianola, radio gramophone and cinema. A cinema is also provided for officers who desire quiet ease.

A motor launch and motor car, which conveys patients free of charge to and from the [illegible] are available for long and short trips at a small charge. Garage facilities are available for patients bringing their own cars.

The charges are payable [illegible] as follows:—

[illegible] Flag officers and retired officers on half pay, £6 6s. per day.

[illegible] Captains, £5 5s. per day.

[illegible] Others, 10s. per day.

Further particulars and booklet apply to the House Governor, Osborne House, East Cowes, Isle of Wight.

Telegraphic address: Convalescent, Cowes. Telephone No. Cowes 251.

CHARING CROSS HOSPITAL MEDICAL SCHOOL CENTENARY, 1834-1934

It is hoped to celebrate this event by achieving the following objects:—

(1) The redemption of all debts.

(2) The provision of hostel accommodation for students.

(3) The establishment of a Chair in Pathology.

(4) Endowment of scholarships.

(5) Extension and repairs to the present medical school buildings.

Further particulars may be obtained. Donations may be sent to The Secretary, Charing Cross Hospital Medical School, 66 Chandos Street, London, W.C.2, and may be specifically allocated to any of the objects of appeal or may be left for allocation as the School Committee of Management may think desirable.

There are several medical officers in the Service who reserved their training there, and others who have appreciated the welcome and interest on extended leave while doing post-graduate courses. These have expressed their desire in words the opportunity for practical proof of all appreciation is obvious.

Notice.

THE INTERNATIONAL CONGRESS OF MILITARY MEDICINE AND PHARMACY

The following has been received from the Secretary of the Permanent Committee :—

— The Organising Committee of the Diplomatic Conference to be held at Brussels in 1935 for the purpose of making war more humane, has received the following communication :—

' The Fifteenth International Conference of the Red Cross in session at Tokio, congratulates the Belgian Government on the initiative it has taken in connection with a meeting of the Diplomatic Conference in Brussels in 1935 to render wars more humane and begs the Red Cross to encourage all efforts for the realization of these projects.'

Considering the importance of the assembly at Tokio, this vote undoubtedly marks a decisive step in materializing the initiative taken by the International Committee of Military Medicine.

' We should be very grateful if you would kindly undertake to give this communication all possible publicity.

Notices.

[redacted] Officers to send [redacted] Papers [redacted] personal experience [redacted] items of news [redacted] Naval Medical Service [redacted] be welcomed [redacted] on home and foreign [redacted]

[redacted] opinions published in the Journal of the [redacted] will become the property of the Journal [redacted] unless the author declares when [redacted] the copyright to himself

[redacted] Marriages and Deaths are inserted free of charge [redacted]

All Communications should reach the Editors on or before the 1st of the month preceding the date of issue. Unless clearly written, they should be typed in order to avoid mistakes, and they should be addressed to the Editors, Journal of the Royal Naval Medical Service, Royal Naval Hospital, Haslar, Gosport.

The Journal of the Royal Naval Medical Service is published quarterly, four numbers comprising one volume.

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VOLUME XXI YEAR 1935 No. 1

Journal
of the
Royal Naval Medical Service.

Editorial.

THE majority of medical men read in the medical journals, only those pages which contain subject matter of interest to them. The exception to this is an editorial for no one knows what it may be about. For this reason we publish under this heading three items of news.

W. G. Burnett, Esq., of Chichester, grandson of Sir William Burnett, who was the first Medical Director General of the Navy, has presented the original painting of Sir William Burnett, by Sir Martin Archer Shee, to the Royal Naval Hospital, Haslar. This will be placed in the Medical Mess. We are glad of this opportunity of expressing the appreciation of our Branch for this kindly gift. (A reproduction of an engraving from this portrait was published in this Journal in 1922.)

Surgeon Captain R. J. Willan, R.N.V.R., whose retirement on reaching the age limit was noted in this Journal in 1933, has been appointed to succeed to the Chair as Professor of Surgery at the University of Durham College of Medicine. We offer the heartiest of congratulations from the Medical Officers of the Royal Navy, not only to Professor Willan, but also to the University of Durham. In spite of his retirement we hope that Professor Willan will note that we, who are still serving, take the keenest of interest in his successes, this being our only way of indicating our admiration of his ability and our thanks to him for his numerous professional and other acts of kindness to so many of us.

In the Journal for 1934, we published an article by Surgeon Lieutenant (now Surgeon Lieutenant Commander) J. W. L. Crosfill, R.N., entitled 'Notes on an Epidemic of "Spider" Burn.' Surgeon Lieutenant Commander Crosfill has since returned from the China Station and brought some specimens of the beetle concerned with him. K. G. Blair, Esq., D.Sc., F.R.E.S., of the Department of Entomology, British Museum, kindly examined these specimens and writes:—"The Beetle is — *Paederus fuscipes Curt.* — An interesting point is that the beetles belonging to this genus very often

have been charged, in different parts of the world, with causing irritation or rash after running over the skin We have four species in this country, including *fusipes*, and though I have handled them many times I have never experienced ill-effects and never heard of any such effects in this country

Original Articles.

RECENT ADVANCES IN NEUROSURGERY[1]

By HUGH CAIRNS F.R.C.S.

GREAT improvements have been made in recent years in the surgical treatment of trigeminal and other neuralgias aural vertigo and some other conditions but this paper will deal only with intracranial tumours which constitute the major part of the neurosurgeon's work The pioneer work in brain surgery was largely done in this country, notably by Horsley and Macewen Recent advances have come mainly from the work of Cushing and his school in the United States The surgical treatment of tumours has gradually become more radical than in former years, when decompression for temporary relief of headache and papilœdema was all that was usually attempted and, at the same time the operative mortality has been reduced This improvement has been brought about by various procedures, by slower and more careful operations by the use of local anæsthesia by the introduction of technical devices such as suction and high-frequency currents and, above all by more accurate diagnosis If the situation and nature of a tumour can be determined before operation then the surgeon is much better prepared to deal adequately with it than if his operation is merely one of exploration and decompression

The methods that have improved diagnosis are, firstly, a more accurate knowledge of the life history of individual types of intracranial tumour, and, secondly *x* rays, ventriculography and other accessory methods The diagnosis of intracranial tumours depends primarily on thorough clinical study, and accessory methods of diagnosis cannot be used intelligently without knowledge of the patient, his history and his physical signs

A considerable number of intracranial tumours probably 20 per cent., contain some calcium, or produce localized erosion or vascular changes in the skull that can be recognized in good stereoscopic radiograms In other cases radiographic appearances will indicate that a tumour is present but will not show its exact position

In those cases where clinical examination does not provide a sufficiently accurate localization, and where radiographic examination does

[1] Abstract of an address given to the West London Medico Chirurgical Society Published by kind permission of that Society

not help, we have recourse to air injection and x rays. The lateral ventricles are tapped by hollow needles introduced through burr holes made in the skull under local anæsthesia and air is then introduced; this is called *ventriculography*. Or, with the patient sitting up the air is introduced by lumbar puncture: this is called *encephalography* because in this method not only the ventricles but also the sulci on the surface of the brain tend to become filled with air. The air-filled spaces show clearly in radiograms of the skull. Practically all intracranial tumours alter the ventricular system in some way. A tumour in one cerebral hemisphere displaces the ventricles to the opposite side, while tumours of the third ventricle or posterior fossa produce symmetrical enlargement of the lateral ventricles.

Varieties of Intracranial Tumour.

We can no longer speak of prognosis and treatment of these cases in terms of intracranial tumour generally, but must consider the pathology and situation of each individual type of tumour. In this connection the term "intracranial tumour" means no more than does the term "abdominal tumour". It would take too long to consider in detail each separate variety of tumour: there are at least fourteen types and many of these are further subdivided on a pathological basis. Only the more common varieties will be mentioned.

Glioma.—Gliomas comprise the largest group of intracranial tumours, about 40 per cent. of any large series. They vary greatly in their structure and in their malignancy. Some composed of undifferentiated forms of neuroglial cells are extremely malignant and for these surgery affords only a temporary relief sometimes prolonged by means of irradiation. Others, notably a tumour in the cerebellum which is seen most often in children, are composed of fully differentiated astrocytes and appear to be quite benign. There are all grades of glioma between the very malignant and the benign ones.

Meningioma.—The meningioma, or dural endothelioma develops from the membranes of the brain. It is usually benign. It does not actually invade though it usually becomes embedded in the brain. Sometimes it invades the overlying bone and spreads on to the outer surface of the skull to form a visible firm swelling. These tumours are often of very slow growth and are frequently difficult to localize by clinical methods. Fortunately most of them give signs of their presence that can be seen in the x rays, either signs of invasion or increased vascularity of the overlying bone. On account of the many blood vessels around them their removal often involves severe bleeding. The likelihood of hæmorrhage can usually be foretold by study of the radiograms and suitable preparations can be made for blood transfusions. The result of removal of these tumours is usually very satisfactory.

Acoustic Neurinoma.—Tumours of the cerebello pontine angle are mostly acoustic neurinomas arising from the sheath of the auditory nerve.

They interfere with the function of the eighth, seventh, sixth and fifth and at times other cranial nerves, on the side of the tumour, and they also produce, in varying degrees, disturbance of cerebellar function on the side of the tumour, and gradually advancing hydrocephalus. The clinical picture is a sharply defined one that can be easily recognized by methodical examination. They are difficult tumours to remove, but, since they are benign the results of thorough operative removal are usually very satisfactory.

Hæmangioma.—Hæmangioma is common in the cerebellum as a solid or cystic tumour. Even when the tumour appears to be entirely cystic there is always a small nodule of solid tumour somewhere in walls of the cyst and if this is not removed the cyst will recur. These tumours are very apt to give rise to confusing symptoms but in most cases the diagnosis can be made on clinical examination alone sometimes help is obtained from the family history, for it is now definitely established that these tumours may be familial and that one member of a family may have von Hippel's disease (retinal hæmangioma) while another has a cerebellar hæmangioma. These tumours appear to be quite benign.

Metastatic tumour is probably the next most frequent tumour in the brain. The most common sites for the primary lesions are in the lung and breast though primary carcinoma in almost any part of the body may produce a metastasis in the brain. The case may appear to be one of primary tumour of the brain for there is no especial course of the illness by which the metastatic character of the tumour can be recognized. In elderly people with a short history of illness it is often advisable to have a radiogram of the chest for this, on occasions reveals a primary carcinoma which is not evident on clinical examination.

Pituitary and Juxta-pituitary Tumours.—These tumours are intra-cranial though usually not intracerebral. Many of them are amenable to surgical treatment. It would take too long to consider their manifold signs and symptoms here.

Conclusion

You will perhaps think that I have talked over much about what are very rare conditions, but all reliable statistics go to show that with the exception of the uterus, and perhaps also the breast the brain is the commonest site of tumour in the body. When we have learned to diagnose brain tumours with greater accuracy it is not unlikely that we will find that tumours are more common in the brain than in any other part of the body. Certainly intracranial tumour is more common than any other organic neurological condition, being slightly more frequent, according to Walshe's figures of Queen Square admissions than disseminated sclerosis and neurosyphilis. In 750 cases of malignant disease in children under 15 years at the Mayo Clinic Helmholtz found that brain tumours accounted for 277, or 40 per cent of the cases, thus forming by far the largest group.

UNDULANT FEVER WITH SPECIAL REFERENCE TO CASES SEEN IN MALTA

By Surgeon Commander S G Rainsford M.D R.N

SECTION I

Introduction
Some Epidemiological Facts—
(a) Geographical Distribution
(b) Season
(c) Sex
(d) Age
(e) Immunity
Incubation Period
Portal of Entry of Infecting Organism—
(a) Via Alimentary Tract
(b) Via Genito-urinary Tract
(c) Via Respiratory Tract
(d) Via Conjunctiva
(e) Via Skin

Introduction

There is an old Irish adage which says "Those that sit on the hedge see most of the game." While this may or may not be true depending on it does on the powers of observation possessed by the individual spectator, it must be admitted that he at least should be able to get a broader view of the game than those actually embroiled in the struggle.

While I was stationed in Malta the authorities of the Civil Hospital kindly consented to allow me to carry out certain laboratory investigations on their cases of undulant fever. In addition to this opportunity for investigating the disease, I had twenty-eight cases under my own personal charge, which included private and naval hospital cases. I also saw a number of cases in private consultation. I now possess clinical notes on seventy-five cases of undulant fever, and I must have seen at least 100 cases of this disease during my three years in Malta. It must be understood, however, that the majority of these cases were only seen by me once or perhaps twice, therefore with the exception of my own twenty-eight cases, my notes by no means give a complete account of the disease in every case which I saw. I do not pretend to write as an authority on this subject, but merely wish to describe the condition as I found it and to offer comment on my findings. It will therefore be understood why I can give a rough estimate of the percentage of cases presenting certain signs and symptoms, but am unable to do so with regard to complications, sequelæ, &c.

Geographical Distribution

Although undulant or Malta fever, as it used to be called, has a world-wide distribution, for which reason some Maltese regard the older title as an unnecessary slight upon their island, yet it has to be admitted that this name has been well deserved. For the incidence of undulant fever is

fever in Malta to-day than in any other country of the world Bigger [7] gives the following figures as the incidence in certain of the Northern European countries for the year 1929 —

Northern Ireland	2·2 per million
Irish Free State	0·7
Scotland	0·3
England and Wales	0·2
Denmark	22·0

The incidence in Malta for the same year was 5 cases per 1,000, or, if translated into comparative figures 5,000 cases per million This comparison is to some extent unfair because practically all cases occurring in the Northern European countries can be attributed to the *bovine* type of *Brucella* which is known to be far less virulent for man than *Br melitensis* In America in the state of Iowa, which is the largest pig rearing area of the world where *Br abortus* porcine infections are endemic the incidence of undulant fever for the year 1931 was only 83 cases per million New experimental evidence has shown that this strain of *Brucella* is probably more pathogenic for man than *Br melitensis* In Iowa the epidemiological conditions are totally different from those pertaining in Malta and consequently a comparison between the figures of these two countries means very little Bigger [7] has drawn attention to the enormous divergence existing between the incidence of undulant fever in the Irish Free State and in Denmark In both these countries the same variety of *Brucella*, that is var *bovine*, is alone responsible (Kristensen M , and Holm P [24]) Bigger therefore concludes that separate strains of even the same variety of *Brucella* can vary greatly in their virulence for the human race It might seem that the climatic conditions are responsible to some extent for this marked contrast in the virulence of certain strains of *Brucella* in different countries, but it is more probable that these variations in virulence are due to distinct epidemiological conditions peculiar to each country These facts have a very important bearing on the diagnosis of this disease, and will be referred to more fully in the appropriate section of this paper

Season

In Malta the disease is most prevalent during the six warmer months of the year—May, June July, August, September, and October During the years 1929 1930 and 1931, more than double the number of cases were notified during these months than in the remaining colder months of each year The figures are shown below in Table I —

TABLE I

	1929	1930	1931
Warm months—			
May to October	968	996	940
Cold months—			
January to April and November and December	350	474	420
Total for each year	1 318	1 470	1 360

The cause of this high summer incidence has already been explained in a previous paper (Ramsford [32])

Sex

Males and females appear to be equally susceptible In Iowa, however Hardy (15) reports that in a total of 375 cases, 289 (77 per cent.) were males and 86 (23 per cent) females In the same state in a group of 125 cases with no history of contact with livestock or carcasses 64 (51 per cent) were males and 61 (49 per cent) females He concludes that males and females are equally susceptible but that in Iowa, where the majority of infections are due to *Br abortus* porcine and are caused by direct contact with infected animals or their carcasses, the preponderance of males infected is purely occupational since more men than women are employed on the farms in the stockyards, and packing houses

In Malta where most of the infections are milk borne and where as many women act as goatherds as men, the distribution of the disease is fairly evenly divided between the two sexes I was however, struck by the comparatively large number of cases I saw in pregnant women or women in the puerperal state This may be purely a coincidence since Malta has one of the greatest if not the largest birth-rate in Europe or it may be explained by the fact that it is a fairly common opinion in Malta that milk is good for women in pregnancy and consequently larger amounts of it are drunk during this period This custom is perhaps, like most customs, well founded for there is a lack of lime salts in most of the food and water of Malta and, at a time when the body requires extra supplies of these, milk certainly helps to supply this deficiency

Age

By far the greatest number of cases seen in Malta fall into an age-group of between 15 to 35 years that is from puberty to young adult life and even in this group 60 per cent of the cases occurred in those of 25 years of age and under Hardy [15] reports that the greater number of Iowa cases were in those between the ages of 20 and 44 years the majority being closer to the higher than the lower limit Here again occupation is probably the underlying cause of this phenomena In Malta the younger age limit is probably explained by the fact that undulant fever has been endemic year in and year out for a very long time, and in consequence of this a very large number of children born there have an inherited immunity comparable with that transmitted from the maternal blood in diphtheria As a child grows older this passive immunity gradually disappears and so the young adolescent becomes susceptible During my three years in Malta I saw only four cases of undulant fever in infants Here it might be appropriate to point out that in some recent investigations Zammit and Debono found that young goats are partially immune. However there would seem to be some other factor in addition to this inherited immunity which plays a minor part in the prevention of infection in the very young In some animal experiments carried out in Malta (Rainford [35]), it was found that young guinea-pigs were much more difficult to

infect with [illegible] In these experiments the possibility of an inherited immunity can be definitely excluded. These facts are of special interest and attain more significance when the selective action of the sexual glands for organisms of the *Brucella* group is remembered. It would seem that with the full development of the sexual organs the body becomes more vulnerable to the attack of these organisms.

In the aged undulant fever, although more often seen than is typhoid, is a comparatively rare disease. I only saw three cases in persons over 60 years of age during my three years in Malta. This is probably because either the older people have developed an active immunity following an attack of fever in their youth, or is the result of receiving numerous sub infective doses throughout their life. As will be explained later this latter method of becoming immune to *Brucella* infections, although it undoubtedly occurs in other countries, must be unusual in Malta. It is also possible, if it is true that the internal secretions of the sexual glands have anything to do with rendering the body more vulnerable to infection, that as age advances and the functions of these glands wane, the body becomes less susceptible.

Immunity

In Malta I saw only one case of undulant fever in a person who had previously suffered from the disease—this was in a man aged 63, who had had undulant fever twenty-seven years before. He informed me that he had drunk raw goat's milk all his life. Huddleson [18] has shown that individuals working in close contact with infective material, such as veterinarians and packing-house employees, can become immune either as a result of receiving numerous sub infective doses or a sub-clinical infection. From these facts it can be fairly safely assumed that one attack confers a fairly lasting immunity.

Incubation Period

Osler and McCrae [27] give the incubation period of the disease as varying from six to ten days. In my opinion the incubation period of undulant fever varies to a much greater extent. In a disease like undulant fever where the onset in the majority of cases is extremely insidious this is bound to be so, for the very term itself is an elastic one, meaning the length of time elapsing between the date of infection and that on which symptoms are first noticed by the patient. The length of this period therefore, will depend to a large extent on the personal element that is on the type of patient. It is extremely difficult to calculate the incubation period accurately as it is practically impossible to ascertain, with any certainty, the date on which infection occurred. Fortunately, five cases were met with in which it was possible to ascertain with a moderate degree of accuracy the time at which infection took place, and in three of these cases the incubation period could be calculated to fall within a definitely limited period. The facts concerning these five cases are set forth in detail —

Case 1—P, stoker, Royal Navy This man was married to a Maltese woman and while his ship was at Malta, he lived with his wife in the city of Valetta He sailed from Malta on June 25 1931, and his ship did not return to Malta until August 18, 1931 On August 6 1931, he fell sick with an illness which was later proved to be undulant fever During the interval June 25, 1931 to August 6 1931, he had not left the ship No other case of undulant fever had occurred in the ship during the previous year and no other case was reported from the ship during the following six months It is, therefore, unlikely that he was infected by a carrier on board If this man was infected in Malta, which appears practically certain, then the incubation period in this case must have been at the very least forty two days

Case 2—M Maltese steward, Royal Navy This man admitted that he drank raw goat's milk when living in Malta He sailed to his ship from Malta on August 29, 1931 and remained well until September 18 1931, when he developed undulant fever He had not left his ship between these two dates The incubation period in this case would be at least twenty days

Case 3—L, seaman Royal Navy Sailed from Malta March 10 1932 His ship did not return to Malta until April 22 1932 This man developed undulant fever on April 18 1932 During the intervening period that is March 10, 1932 to April 18, 1932, he had been ashore once on the French Riviera but had taken nothing by mouth except a glass of beer The incubation period in this case would also appear to be very long, forty days

Case 4—P, stoker, Royal Navy This man developed undulant fever on May 22 1932 He stated that the only food or drink he had had ashore in Malta since the previous year was on May 13, 1932 when, out on a picnic, he bought some buttered buns and ate them Presuming here that the butter was the source of infection the incubation period in this case would be only nine days

Case 5—E, Maltese joiner This man developed undulant fever on June 25 1931 He never drank milk because he disliked it On June 14 1931, when taking a walk in the country he became very thirsty and bought a glass of goat's milk from a goatherd and drank it If this man's statement is to be trusted the incubation period would be eleven days

It will be seen that the incubation period of this disease does appear to vary very greatly and in the five cases quoted the minimum was nine days and the maximum forty-two days As already stated this extreme variation in the incubation period is partly due to the very insidious nature of the onset of the disease but like all diseases produced by infection, it must also depend to some extent on dosage of the infecting organism, the individual resistance of the patient and the portal of entry by which the organism invades the body Otero [28] produced human infections in two cases by giving two volunteers milk to drink which contained forty eight-hour old cultures of *Br abortus* porcine In one of these cases the incubation period was at least seventeen days possibly thirty four days since two exposures were given each seventeen days apart The second case broke after five daily exposures, ten days after the last dose Hardy [15] describes a case in a packing house employee which followed a severe laceration of the arm with a knife which he was using to free the rectum of a freshly killed pig This man first experienced symptoms eighteen days after receiving his injury but it was four weeks before he consulted a

physician In these examples a heavier inoculation than that which naturally occurs may be assumed Hardy considers that in human beings naturally infected the incubation period probably varies between ten days and three weeks

Portal of Entry of Infection into the Human Body

It is not proposed here to delve into the finer points of the epidemiology of undulant fever as this subject has already been fully dealt with in a previous paper Ramsford [32] Certain additional facts have come to light since that paper was published and some of these, in connection with this particular part of the subject are worthy of mention It is obvious that, before infection can be successfully produced the infecting organism must force an entry into the body either through the epithelium of one of the mucous membranes the skin or the respiratory tract

Infection through the Alimentary Tract

It has been assumed for a long time that, since the majority of these infections in Malta are milk borne, the portal of entry is through the mucous membrane of the gastro intestinal tract In a previous paper Ramsford [32], I showed that this was very improbable, chiefly because it is doubtful and unlikely that organisms of the *Brucella* group could withstand the acid secretions of the stomach and remain viable It was suggested that the portal of entry in these milk borne infections was more probably through the mucous membrane of the mouth or pharynx It was considered that some relation might be found to exist between oral sepsis and undulant fever and for this reason, special attention was paid to the oral condition of fourteen cases under close observation in hospital Of these, nine either developed or were found to be already suffering from some kind of oral lesion One peculiar form of ulceration of the mucous membrane of the mouth was particularly common, being found in seven of the fourteen cases this took the form of a small shallow ulcer with very inflamed looking uneven edges and a dirty yellow base In size these ulcers varied from three to ten mm in diameter The commonest situation in which they were found was at the junction of the mucous membrane of the lip and the gum and more usually the lower gum, but they were also seen on the soft palate and buccal mucosa More usually they were solitary, but occasionally several of these ulcers were present simultaneously and, when this was so, each individual ulcer tended to be smaller than when only one was present These ulcers appeared to be quite painless and caused the patient no discomfort whatever, consequently they were only found after careful examination of the mouth, in no case was attention drawn to their presence by the patient himself Being shallow, they healed rapidly without the need of any special treatment and usually had completely healed within one week of their appearance Cultures were made from the bases of these ulcers but only those organisms which are usually found as part of the

normal flora of the mouth were isolated. In five of these seven cases in whom the peculiar form of ulceration was found there were in addition other oral lesions: two had extreme dental caries, in one severe Vincent's infection and pyorrhœa of the gums, and in two the disease set in with sore throat and pharyngitis.

With regard to the two remaining cases of the nine showing oral lesions, in one the disease was ushered in with severe ulceration and inflammation of the tonsils, and the other developed a non-suppurative parotitis of both parotid glands on the ninth day of the disease. In this last case it is just as probable that the parotitis was due to a blood stream infection as to an ascending infection from the mouth, especially when it is remembered how often the appearance of orchitis complicates this disease. It is my belief that in some cases in which orchitis develops the portal of infection has been via the urethra or penis and not through the mouth. Five of the fourteen cases under observation developed no oral lesion, but three of these did not come under observation until the forty-third, fifty fourth, and fifty-fifth day of the disease respectively. The remaining two cases were under observation from the eighteenth day until the thirty eighth day of the disease in one, and from the ninth until the thirty eighth day in the other. During this period neither showed any signs of any pathological condition of the mouth or pharynx. It will be seen that, out of a total of eleven cases that were under observation from a comparatively early stage of the disease, in only two did the mouth and pharynx remain healthy. This is highly suggestive of infection gaining entry through the mucous membrane of the mouth. Whether the small peculiar ulcers are actually the site of primary infection, or not, is a matter for conjecture. It is known that in *Br. tulavensis* infections an ulcer is sometimes formed at the site of entry, it is not unreasonable to assume that the small ulcers found in *Br. melitensis* infections are due to the same cause. The principal objections to this point of view are, firstly, that this form of ulceration has not been previously reported by any observer and, secondly, the varying length of time which it takes to develop. The first of these objections may be explained by the fact that the lesions are painless and healed rapidly hence they easily might have escaped being observed. The second objection may be accounted for by variation in the length of the incubation period in each specific case presuming that the length of time taken for these ulcers to develop remains more or less constant from the date of infection. If this supposition is true, a case with a short incubation period would develop these lesions at an apparently much later stage of the disease than would a case in whom the incubation period was longer. It has already been shown that the incubation period of undulant fever varies greatly. Five cases have been described in which circumstances made it possible to confine the incubation period within certain definite limits for each case. Two of these five cases developed these peculiar oral lesions and, consequently, it was possible to calculate the length of time taken for these ulcers to develop

in each of the two cases The two cases were Cases 3 and 4 already described under the heading of incubation period

The details of the cases are —

Case 3 —Onset April 18, 1932 Admitted to R N Hospital Malta, April 25, 1932, that is on the seventh day of his illness On admission two small ulcers were found present on the buccal mucosa just below the opening of the duct from right parotid gland It has been shown that the incubation period in this case must have been at least forty days It would therefore appear that these ulcers took about forty seven days to develop

Case 4 —Onset May 22, 1932 Admitted to R N Hospital, Malta May 26, 1932, that is on the fifth day of illness On June 26, 1932, a small ulcer appeared on the gum over the first premolar of the upper jaw on the right side of the mouth The incubation period in this case was shown to be short only nine days and this ulcer would appear to have taken forty-five days to develop

It is very remarkable how very closely the time taken, for these peculiar oral lesions to develop agrees in these two cases To make these facts clearer, details of all fourteen cases are shown below in Table II

TABLE II

Case No.	Calculated incubation in days	Day of disease when case was under observation	Day of disease on which ulcer appeared	Other oral lesions	Remarks
1	43 days	180th	—	Mouth healthy	Patient was only under observation until the 83th day of the disease Mouth remained healthy upto this period
2	20 days	55th	—	Mouth healthy	Came under observation at a very late stage of the disease
3	40 days	7th	47th	Sore throat and pharyngitis	Calculated time taken for ulcer to appear in this case 40-47 days
4	9 days	6th	45th	Dental caries	Calculated time taken for ulcers to develop 45 days
5	11 days	43rd	—	Mouth normal	Came under observation at a very late stage of the disease
6	"	14th		Tonsilitis and pharyngitis	Disease set in suddenly with sore throat pharyngitis and tonsilitis
7		64th	—	Mouth normal	Came under observation at very late stage of the disease Onset with diarrhœa and gastro intestinal symptoms
8	"	8th	30th	Vincent s angina and pyorrhœa	
9	"	24th	12n l	Alveolitis	
10		14th	36th	Dental caries	
11		11th	—	Mouth healthy	Only under observation for 28 days that is up to the 38th day of the disease
12	?	27th	40th	Pharyngitis on 31h day	
13	?	8th	20th	Pharyngitis	Onset with sore throat and acute pharyngeal catarrh Convalescent when ulcers appeared on palate
14		8th		Parotitis appeared on 10th day	Onset with sore throat and pharyngitis

If this [illegible] actually it will be [illegible] only those cases which came under observation early the constitution only in two was no pathological condition found in the mouth or throat It will be further noted that in one of these, Case 1 the incubation period was calculable and proved to be very long It is therefore quite possible that oral lesions might have been present but had healed before this case came under observation, that is, before the twelfth day of the disease To conclude, I think that this clinical evidence, small as it is, at present supports rather than contradicts the contention that the chief portal of entry in the majority of these *Br melitensis* infections is through the mucous membrane of the mouth, throat or pharynx

Infection through Mucous Membranes of Genito Urinary Tract

In a previous paper it was pointed out that infection in a few cases almost certainly occurs through the mucous membranes of the urethra, vagina, or penis, Ransford [32] It was suggested that infection probably follows sexual intercourse between a convalescent urinary carrier and a healthy subject The vagina on account of its acidity acts as an ideal storehouse for the *Brucella* group of organisms In some recent investigations, Ransford [35], using experimentally infected guinea-pigs and hamsters, *Br melitensis* was frequently isolated from the vagina These experiments taken together with the work of Bang on the epidemiology of epizootic abortion in cattle would appear to prove that organisms of the *Brucella* group can live and flourish in the acid secretions of the vagina For this reason it is probable that the path of infection resulting from sexual intercourse is more frequently from woman to man than vice versa It must not be assumed, however, that infection cannot occur in this way from men to women, for in the same animal experiments already referred to *Brucella* were frequently isolated from the seminal vesicles of both guinea pigs and hamsters even when the testicles remained healthy This theory of the transmission of undulant fever by means of sexual intercourse between humans while supported by experimental laboratory evidence is very difficult to prove in actual fact I, personally believe that this method of transmission of this disease accounts for some of the sporadic cases of undulant fever met with in the Navy where no history of ingestion of goats milk or its by products can be obtained But it is quite impossible to get a history of exposure to infection through sexual intercourse from the average man Further research and investigation of convalescents and urinary carriers is needed before it will be possible to ascertain how great or small is the danger of spreading this disease by means of sexual intercourse

Infection through the Respiratory Tract

Dudley [10] has produced statistical evidence to prove that under certain conditions, such as in the overcrowded and poorly ventilated older warships of 1860, *Br melitensis* acquires the power of spreading from man

to man by means of droplet infection Once having acquired this power it would seem that this organism tends to become adapted to an entirely human environment and, for this reason, it tends to spread from man to man even under conditions which would normally be unfavourable to this form of transmission Dudley has drawn attention to the similarity of this behaviour of *Br melitensis* to that adopted by *B pestis* under similar conditions of overcrowding and poor ventilation, and points out that in this way the pneumonic forms of undulant fever and of plague arise The pneumonic form of undulant fever is the rarest of all the various clinical types of this disease in Malta I only saw four cases during the whole of my time in Malta, three of these were infants under 4 years of age, and the remaining case was that of a naval rating It has already been stated that undulant fever is a rare disease in infants presumably because the majority are breast fed and partly because of an inherited immunity It is therefore remarkable that a form of this disease which is rare in adults should be so much more common in children The Maltese are passionately fond of children and are still old fashioned enough to allow their babies to be kissed and fondled by all acquaintances The inference, in view of Dudley's remarks is obvious Here, however it is necessary to point out that bronchial catarrh and minor pulmonary complications are fairly commonly seen in the ordinary form of undulant fever I have frequently cultured the sputum from this type of case but only with negative results, although blood cultures were positive The only adult case of this pneumonic type investigated was unfortunately not admitted into hospital until he was practically convalescent Vaum [41] succeeded in isolating *Br melitensis* from the sputum of cases resembling pulmonary tuberculosis It would appear, however that in all these cases the disease was primarily pneumonic It is possible that all my three infant cases were not suffering from a true pneumonic form of undulant fever, but, as is common in very young children, had developed bronchopneumonic complications secondary to a severe infection For technical reasons it is very difficult to obtain satisfactory samples of sputum for culture purposes from very young children even when they are in hospital and in their own homes as these three were it was quite impossible

It is very remarkable that this pneumonic form of undulant fever should be so rare in Malta for in certain districts conditions would seem to be ideally favourable for the development of this form of the disease In one house, situated only a stones throw from the Naval hospital gates live six people This dwelling is 18 ft by 12 ft and about 8 ft high and is formed of four walls the continuity of one being broken by a large door 6 ft by 6 ft , with the exception of this one door no other means of ventilation exists and the whole family sleep in this single room at night with this door closed and locked There is no fireplace or chimney the cooking being performed on a Primus stove with the aid of a paraffin lamp for lighting There are no windows to the house A similar condition of

affairs is carried out [illegible] without difficulty all over the island in both rural and town districts and in spite of this, the pneumonic form of undulant fever is rarely seen. This is probably explained by two facts: firstly the climatic conditions enable the Maltese to live almost entirely out of doors—the Maltese in the poorer and more overcrowded districts sleep, eat, and entertain their friends outside their houses, the house itself being used only as a store for their private effects and as a kitchen—and it is only during the very cold months of the year that any time is spent indoors. The second factor which probably helps to prevent an outbreak of this pneumonic form is that the normal incidence of Malta fever for other epidemiological reasons, Ramsford [32] is at its lowest during the cold weather months. If, therefore the meteorological conditions in Malta should ever change so that a very cold spell of weather was experienced during the spring of the year, when the incidence is rising it is possible that a severe epidemic of this pneumonic form of Malta fever might arise in the poorer and more overcrowded districts of the town.

It is of interest to note that all four cases of the pneumonic form seen by the author were winter cases. The fact that babies are kept more indoors than adults, especially at night, might also help to account for the apparent higher incidence of this pneumonic form amongst infants. Lastly, if we regard the population of Malta and the crews of the ships of 1860 mentioned by Dudley as two separate herds, then in the former, we have a herd more or less partially immune, whereas the latter can be safely considered as highly susceptible. This question of herd immunity probably plays a greater part in the prevention of epidemics of pneumonic undulant fever in Malta than any other factor.

Infection through the Conjunctiva

Hasseltine [16] states that it has been found that dropping cultures of *Brucella* into the conjunctival sac of animals gives rise to an infection which is so readily produced as by feeding experiments. In a previous paper, Ramsford [32] I pointed out the danger of infection with dust from the befouled roads of Malta and drew attention to the high incidence of Malta fever amongst garage hands, chauffeurs bus drivers, &c. It is possible that some of these followed the introduction of dust into the eyes. Horrocks and Kennedy (1906) succeeded in infecting goats with dust contaminated with the urine of Malta fever patients. In three cases that I have seen of accidental infections occurring in the laboratory, two of the victims wore spectacles. One of these men I knew well and had watched him working; he was continually removing his glasses and wiping his eyes, and it is probable that he infected himself in this way.

Infection through the Skin

Hardy [15], and Huddleson [22], have produced extensive epidemiological evidence to show that the majority of human cases occurring in the

States of Iowa and Michigan are infected through the skin. Hardy has also shown that about 70 per cent of the infections in Iowa are due to *Br. abortus* porcine, consequently it would appear that in the majority of cases in which the disease has been transmitted from pigs to man this method of infection is of primary importance. Hardy (1929) and Ramsford (1934) have succeeded in infecting guinea-pigs with *Brucella* through abraded and also through the undamaged skin. Hardy found that if the skin was only slightly abraded 100 per cent of the animals became infected, and with undamaged skin 80 per cent. while only a little over 20 per cent were successfully infected by ingesting the organisms. The important bearing which this infection through healthy skin by the *Brucella* group of organisms has on the transmission of infection both from goat to goat and goat to man in Malta has been previously noted, Ramsford [32].

SECTION II

CLINICAL MANIFESTATION OF UNDULANT FEVER

CLINICAL TYPES—

(*a*) Undulatory Form
(*b*) Intermittent Form
(*c*) Pneumonic Form
(*d*) Ambulatory Form
(*e*) Severe Chronic Form
(*f*) Acute Abortive Form
(*g*) Malignant Form
(*h*) Atypical Form

CLINICAL ANALYSIS—

(*i*) Symptoms
(*k*) Signs

THE CLINICAL MANIFESTATION OF UNDULANT FEVER

The clinical manifestation of this disease varies so greatly that it is quite impossible to give a description which will include all types of cases. Craig [9]—in his description says, 'It is extremely difficult to describe, accurately, all the forms which this truly protean disease can assume.' I propose to use the classification of Hughes [17] for convenience. Hughes divided undulant fever into malignant, undulatory and intermittent forms. To these I propose to add the pneumonic the severe chronic the mild chronic, the ambulatory and abortive forms and lastly atypical forms. It must be understood that the following descriptions refer to undulant fever cases as seen in Malta and that I have no personal experience of undulant fever in any other country.

Undulatory Form

This is the commonest type seen in Malta. 57 per cent of my cases falling into this category. The onset is usually very insidious. The patient reports with indefinite symptoms and sometimes has the greatest of difficulty in explaining what he actually feels wrong with him. Nearly all patients

[illegible] sleeping badly [illegible] headache, general aches and pains or severe pain in the back of the neck a feeling of cold or an attack of shivering in the evening are other common symptoms In a small number of cases the onset is sudden perhaps with a rigor severe headache or pain in the back of the neck This sudden form of onset is however, more usual in the intermittent and very severe forms Other symptoms associated with this sudden onset are sore throat, nasopharyngeal catarrh general aches and body pains and, very rarely, hepatic pain and vomiting Physical signs, with the exception of fever which is typically undulatory, are conspicuous by their absence The typical tongue slight catarrhal signs in the chest, perhaps some hepatic tenderness, a yellowish discoloration of the skin and increased knee jerks being the only signs observed in the majority of cases The blood picture usually shows a leucopenia with a relative lymphocytosis The urine in the early stages is scanty, high coloured and contains urobilinogen in excess with perhaps small amounts of albumin Thus, with the exception of the fever there is very little of a specific nature in either signs or the symptoms Cases vary greatly with regard to what symptoms may or may not be present Sometimes weakness and lethargy are the only symptoms It is a very common occurrence to see a patient who complains only of feeling continually tired One very remarkable sign is the marked disproportion existing between the sense of feverishness suffered by the patient and the actual temperature registered Often cases are seen who while at rest in bed feel perfectly well and are mentally active cheerful and interested in what is going on around them and yet may be running a temperature between 102 to 104° F

Course

The case of average severity if merely treated on symptomatic lines continues to run a high temperature for anything from twelve to sixteen weeks During this period, one pyrexial wave follows another with monotonous regularity with, perhaps, in very severe cases an occasional interruption in the form of a rigor Usually after this length of time has elapsed, each successive pyrexial wave tends to become shorter while the interpyrexial period gets longer until finally the temperature settles down and remains at the normal level In very severe cases, this succession of pyrexial waves may continue for six months or longer In some cases the character of the temperature may change, becoming intermittent rather than undulatory These prolonged cases become very weak, anæmic and wasted and convalescence is, usually very protracted nevertheless one of the most remarkable phenomena of this disease is the very slow debilitating effect which it appears to have on the average patient Of course there are exceptions to every rule but I have seen many patients who, after suffering from high fever for over twelve weeks, looked comparatively well

and were able to sit up in bed and eat a hearty meal This form of the disease is very prone to relapse

Intermittent Type

This clinical type only differs from the undulatory form in the character of the temperature which is regularly intermittent and not undulatory In Malta, only 20 per cent of my cases belonged to this form but this does not include chronic cases if these are included the total number would be about 28 per cent Generally speaking the intermittent form of this disease is more severe, more debilitating and more resistant to treatment than the undulatory form the onset is more often sudden than insidious, and rigors are more frequent When a cure is affected, this type of case shows less tendency to relapse than the undulatory form It would appear that this form of the disease is the one most usually met with in infections due to *B abortus* of both porcine and bovine varieties Hardy [15], in a very comprehensive report on the clinical aspect of undulant fever in Iowa, asserts that the true undulatory type of fever was rarely seen and that he had not encountered one chart that approximated closely to those typical of undulant fever in Malta He goes on to state ' The one feature which overshadows all others in the description of undulant fever of caprine origin is the undulatory type of temperature, a rare finding in that of bovine and porcine origin Moreover the effusion into the joints must have been much more common than we have discovered and the neuritis more severe On the other hand rigors were noteworthy, but these are rarely mentioned in the descriptions of the *melitensis* infections Viewing this in another way we see that in undulant fever of caprine origin the undulatory type predominates in that of bovine and porcine it is the intermittent type that is most common My own experience agrees with these remarks of Hardy's with the exception of those referring to rigors In Malta 36 per cent of my cases had rigors which is exactly the same percentage as published by Hardy for the Iowa cases, also, although painful joints were more common in the Malta cases, actual effusion into the joints was comparatively rare

Pneumonic Type

I can write with very little experience of this form of undulant fever, having only seen four cases, three of whom were in infants For reasons already stated and which will be easily understood it is impossible to regard the disease in infants as typical I can only write from a personal experience of one case and from a knowledge of the description given by others with a wider experience of this peculiar clinical manifestation of the disease The onset is usually sudden with symptoms which in some ways resemble acute lobar pneumonia Occasionally the disease is ushered in with a rigor, in which case it will almost certainly, at first be mistaken for pneumonia More commonly, the patient reports complaining of malaise, cough, tightness of the chest and some difficulty in breathing These

[illegible] gradually become more aggravated [illegible] [illegible] the sputum is scanty, viscid and grey coloured Later the [illegible] develops signs of lobular or lobar consolidation and the sputum becomes either blood streaked or definitely rusty The temperature is still typically undulatory or, more often, irregularly intermittent In spite of these signs and symptoms the patients suffer very little constitutional distress and the respiration rate seldom rises above 30 It will be seen how easily these cases are likely to be mistaken for pulmonary tuberculosis when the feverish state is prolonged—the drenching night sweats, the loss of weight the marked optimism of the patient, the irregular intermittent and prolonged fever the blood stained sputum and the wasting are all common to both diseases In infants this form of undulant fever is very severe and such complications as hyperpyrexia, convulsions and meningismus would seem to be the rule rather than the exception consequently this form is frequently fatal to the very young In adults, after this form of the disease has run its course for some weeks, a complete change in the character and form of the illness commonly takes place the localizing signs in the chest disappear and the disease assumes all the characters of either the intermittent or undulatory forms

Ambulatory Form

This form of the disease is seldom seen in hospital it is therefore, quite impossible to give any sort of estimation of the incidence of this type of undulant fever in Malta Hardy [10] states that 26 per cent of the Iowa cases were ambulatory In Malta most of the cases which could be included under the term ambulatory resulted from and followed an acute attack of fever, it would seem, therefore, that the term "Mild Chronic Form in contradistinction to 'Severe Chronic Form' would be more applicable for it is frequently possible to get a history of an acute attack of fever, usually of short duration, having occurred in the not very distant past In these cases, commonly, the only symptoms are occasional evening headache, and lack of energy, especially towards the end of the day and, perhaps, slight rheumatic pains. These patients generally, are able to continue in their employment and do so, providing that it does not entail heavy manual labour Consequently the majority of the cases that come under observation are manual workers such as stevedores agricultural labourers &c. When under observation it is found that they run a very irregular temperature For example the temperature may remain normal for a week or two and then be followed by a regular evening rise of temperature of not more than one or two degrees which may continue for a month or six weeks after this, there is another apyrexial period and this is followed again by a stretch of fever This is the type of case in which both liver and spleen are often found to be enlarged These cases are very difficult to diagnose, the agglutination reaction is generally inconclusive and the titre of the serum is seldom higher than 1 40 Blood-cultures may or may not give a positive result, though the latter is more usual, but the melitin test is nearly always positive

Severe Chronic Form

This type of case is fortunately rare for undulant fever in its very worst form. The majority of these cases appear to be quite incurable and gradually die after a very prolonged and harrowing illness. It is difficult to differentiate on paper between the severe chronic and the prolonged acute type of case. The former is gradually evolved from the latter, nevertheless a very distinguishing line can be drawn separating the one from the other. The succession of events is as follows. After a severe and acute attack of fever the patient slowly recovers but, a month later has a relapse; relapse after relapse follow each other at irregular intervals, and each succeeding relapse proves more resistant to treatment than the previous one. Finally the patient is readmitted to hospital in a very debilitated, anæmic and wasted condition. The fever which is at first undulatory, becomes intermittent and continuous, and neuritis and rheumatic pains are often very severe, anorexia is marked and the patient consequently wastes rapidly. The urobilinogen increases daily in the urine, and signs of hepatitis and jaundice may develop. The patient sinks rapidly until some complication intervenes to terminate the illness fatally or the patient dies of sheer inanition. There are certain definite phenomena associated with this chronic febrile state: first, although the temperature is high continuous and intermittent, blood-cultures are nearly always sterile. Secondly, if continuous records are kept, it will be found that the agglutination titre of the serum shows a steady fall while the patient's condition continues to deteriorate. This fall remains unchecked and shows no reaction to the administration of vaccines. Thirdly, the blood picture changes, leucopenia still remains but the lymphocytosis is replaced by a relative increase in the polymorphonuclears. In the last stages the agglutination reaction may be absolutely negative and there is a terminal leucocytosis with a large number of band and other immaturely formed polymorphs. This is very different from what is found in the prolonged acute case, where blood-cultures are continuously positive and the agglutination titre tends to rise or remain steady at a high titre level. It will be seen from this account how difficult it would be to diagnose such a case if it were seen for the first time at a very late stage of the disease. Personally I believe that a more thorough study of the pathology of this disease might materially assist in unravelling some of the mysteries regarding immunity, for undulant fever would appear to be primarily a disease affecting the reticulo-endothelial system and the phenomena that I have described above would fit in perfectly with our ideas as to what should follow when this great system becomes blocked.

Acute Abortive Form

This form of the disease differs from the more common undulatory type only in the duration of the illness which is very short (five to ten days). The patient is admitted to hospital with fairly high fever and the usual indefinite symptoms: the fever gradually rises, reaches a peak of

103° to 104° F., and then commences to fall by lysis to normal. Following this, there is no recurrence of fever and the patient is perfectly well. It will be seen how easily such cases, even if they did come under observation, would be overlooked and shown in official returns as P.U.O., influenza, catarrh, &c., since such terms are frequently used as a label for any mild febrile illness. In consequence this form of the disease appears to be much rarer than is actually the case, for the cases seldom come under observation in either hospital or private practice and when they do they often go unrecognized. The existence of such cases as described is denied by some, but although I have seen only one case of this type I believe that many such cases must occur in Malta (*see* Part IV for description of case seen by the author). These facts have a very important bearing on the diagnosis of this disease, and their relation to the value and significance of the agglutination test will be dealt with in a later section of this paper. Moreover, I would point out that if these very mild attacks of fever can be produced by infections with *Br. melitensis* they ought to be even more commonly seen in countries where only the less virulent *Br. abortus* infections abound. Wilson [42] in a recent paper, calculated on epidemiological grounds, that in the year 1930 about 480 cases of undulant fever occurred in England and Wales. This is a very different estimate from that of Bigger [7], namely, an incidence of 0·3 per million. Bigger's estimate was made on recognized cases and therefore it would seem that, if Wilson's figures hold any truth the majority of cases occurring in England and Wales are so mild that their true significance is never realized.

Malignant Form

Hardy describes a malignant type of undulant fever in which the onset is sudden with rigors and marked prostration. The skin is dry, the temperature high and sustained, and constipation a marked feature. The disease runs a rapid course with hyperpyrexia, delirium and coma as common features in the terminal stages. There are signs of intense intoxication and death usually takes place in the second week. Except perhaps, for two cases both infants, I have never seen anything in Malta that resembled this form of the disease. All Hardy's cases were due to infection with *Br. abortus* porcine.

Atypical Forms

The atypical forms, which are by no means rare, can resemble the clinical manifestations of almost any of the acute infections such as enteric fever, meningococcal meningitis, malaria, acute rheumatism, typhus fever and acute genito-urinary infections, such as cystitis and pyelitis.

A Clinical Analysis

Onset.—Is either sudden or insidious—in 37 per cent. of the Malta cases the disease set in suddenly. In most of the cases where the onset

in abrupt the patient reports complaining of definite general malaise shivering or with acute nasopharyngeal catarrh and cough resembling an ordinary acute attack of catarrh In fact, quite a number of these cases are at first considered to be merely suffering from a common cold In 66 per cent the onset was more gradual The majority of these report sick complaining of weakness and a general feeling of being out of sorts for about a week Very frequently they complain of feeling cold in the evenings of evening headache, of night sweats and insomnia Sometimes a patient will report with no other symptom except weakness or that he feels light headed on parade or on watch or perhaps because he has fainted When this type of case is examined it is found, nearly always, that the temperature is very high, 103° to 104° F and yet no complaint is ever made of anything that would suggest high fever

Symptoms

Weakness—The commonest of all symptoms during the early stages is this complaint of weakness, and quite frequently this is the only symptom Often these patients will state that while they are at rest in bed doing nothing they feel perfectly well—although at this time they are running a temperature between 103° to 104° F If, however, they are up and about they feel tired and listless In my series of cases 86 per cent complained of this symptom

Pain—In 64 per cent of cases there was severe headache which was more often occipital than frontal This was often accompanied by severe pain in the back of the neck, and this often led one, erroneously to suspect meningococcal meningitis or sinusis especially in those cases in which the onset was sudden This combination of symptoms, pain in the neck and headache is so common (present in 50 per cent of cases) that one learnt by experience to consider it as almost pathognomonic of this disease Patients usually complain that the headache is more severe in the evenings In fact the symptom of headache in the majority of cases appeared to be directly related to the temperature, or, perhaps the bacteræmia, for, during the apyrexial periods all traces of headache disappeared General aches and body pains were complained of by 64 per cent of cases This symptom is present only in the very early stages of the disease Even in cases who remain febrile for two or three months, this symptom is present only during the first two weeks Backache was present in 36 per cent of cases, and only in those patients who were seriously ill, in a number of these it appeared to be to some extent postural It is never very severe or likely to be mistaken for typhoid spine. Abdominal pain was present in some form or another in 43 per cent of cases In the majority of these it was either definitely hepatic or splenic in origin Very acute splenic pain which completely immobilizes the patient frequently follows the injection of vaccines This pain is so severe that these patients have to be given morphia for relief The cause appears to be a perisplenitis, for this pain is

[illegible] to the upper left side of the [illegible] and lower left side of the chest and is [illegible]rated by the slightest movement deep breathing or coughing This symptom closely resembles an acute pleurisy and it is by no means easy to distinguish which of the two conditions is present since pleurisy sometimes complicates undulant fever Hepatic pain is by no means as common a symptom as some writers would seem to suggest It was present in one or two of my cases at the onset, but was more often complained of by the chronic cases in the terminal stages of the disease when it was sometimes associated with jaundice Pain in the epigastrium is occasionally present as one of the first symptoms General colicky abdominal pain associated with constipation is more frequent Genito urinary pain suggestive of a urethritis or cystitis was present in one case Pain in the testicles, without signs of orchitis, such as swelling and tenderness, was complained of by several of the more severe cases Painful joints occurred in 57 per cent of cases in my experience This would appear to be by no means as frequent a symptom as is usually stated This involvement of the joints only occurs in the severest of cases and might be considered more as a complication than what is to be expected during the normal course of the disease in this series of cases it was nearly always a late phenomenon and was practically never seen during the acute stage Painful joints are rarely seen at all during the febrile stage this is so often the rule that an early appearance of rheumatic symptoms can be regarded as a favourable sign since it so frequently immediately preceded the stage of defervescence The commonest joints to be affected are the ankle and elbow but practically every possible joint of the human body can be involved, including the atlanto occipital and those of the lower jaw It has already been stated that it is rare to see swollen and painful joints in the acute febrile stage, but this statement strictly applies only to acute primary attacks of fever In relapsed or chronic cases these rheumatic symptoms are often present together with high fever It is worthy of note that a very large number of cases first develop these rheumatic symptoms during a relapse As a symptom this pain in the joints is seldom a very urgent one, and is nothing like so severe as the very acute pain suffered by patients with acute rheumatism

Sweating —Drenching night sweats reminiscent of those of patients with tuberculosis were complained of by 64 per cent of cases One of the most remarkable things about this disease is the capacity which the skin has of keeping moist even when there is a very considerable degree of pyrexia I think that this explains the marked disproportion which often exists between the sense of feverishness suffered by the patient and the temperature registered, for a very large percentage of patients appear to suffer no discomfort or even to notice anything wrong when they have high fever

Chills —This is often one of the first symptoms to be complained of and was present in 64 per cent of cases Frequently the patient states,

amongst other things that he feels cold in the evening It is, however, only a symptom complained of by the very early cases or by ambulatory cases who are still up and about

Respiratory System.—Nasopharyngeal catarrh, as already stated is common at the onset in a fairly high percentage of cases Cough and tightness of the chest with the expectoration of frothy watery sputum, were present in 79 per cent of cases in the very early stage but these symptoms usually only lasted two or three days, except in the pneumonic form of the disease in which respiratory symptoms naturally overshadowed all the other symptoms

Gastro-intestinal.—Anorexia is conspicuous by its absence It is remarkable how patients who have been running a continuously high fever for weeks still manage to retain their appetite This peculiar combination of signs and symptoms namely, high fever with good appetite and feeling of wellbeing might be described as the 'undulant fever syndrome However in 83 per cent of my cases there was marked anorexia In all these the infection was very severe and the temperature in most of them tended to be intermittent rather than undulatory Diarrhœa was an urgent symptom in two cases In most of the severe cases constipation is troublesome and obstinate

Neurological.—Insomnia was a troublesome symptom in 64 per cent of cases and appeared to be directly related to the pyrexia for when the fever was low and during the apyrexial intervals the patients slept well A peculiar mental state occurs in some cases of so definite a nature that it might be described as another variety of the disease This case is extremely irritable and apprehensive, sleeps very badly and is inclined to weep easily The minds of these cases would seem to be temporarily deranged for they often will make the most absurd requests and statements, and sometimes bring ridiculous and false accusations against the nursing staff &c Delirium is rarely seen but sometimes occurs in this type of case This nervous form of the disease is by no means rare, since these symptoms were presented to a greater or less degree by 45 per cent of cases in Malta

Cardiovascular Symptoms.—Light-headedness, fainting attacks vertigo &c are commonly complained of by patients when they first come under observation Most of these symptoms rapidly disappear with rest in bed Palpitations and tachycardia are present in a few of the severe cases in the older patients

Genito Urinary.—Most of the symptoms of this nature have already been referred to under the heading of 'Pain'

Signs

Appearance.—Most of the patients do not look ill even after they have endured several weeks of high fever There is seldom any sign of prostra-

tion The skin, even when the temperature is high, is usually moist, and in the majority of cases is of a peculiar yellow colour, this tinging of the skin is very faint for this reason it might not be noticed except by the experienced observer and yet it is of so definite a nature that once it has been seen it would almost certainly never escape being observed again When the fever is high patients are inclined to be lethargic and sleepy especially in the mornings, most probably because they usually sleep badly at night With the exception of the nervous and irritable type of patient who resents questioning most patients appear cheerful and take an active interest in their surroundings, &c. The nervous type, however, resent all forms of external stimuli and if they choose to reply to a question it is usually with a monosyllable They never speak unless spoken to unless it is to make a complaint or an accusation against the nursing staff

Mouth —The typical tongue is coated with thick fur and has red and raw looking edges and tip This typical appearance was seen in 58 per cent of cases Ulceration of mouth and pharynx, tonsillitis, pharyngitis &c. are all common signs in the early stages that is the stage of invasion

Chest —During the first few days in 79 per cent of my cases there were signs of a mild catarrhal bronchitis

Abdomen —In the early and acute stages there are usually no physical signs to be made out in this region No enlargement of either liver or spleen was found in a single acute case during the early stage of the disease In twenty one of the seventy five cases (28 per cent) some enlargement of the spleen was present These twenty one cases with enlarged spleen were found amongst all the various forms of the disease as follows Severe chronic form four chronic ambulatory form five intermittent form six, undulatory form six In both the intermittent and undulatory forms enlargement of the spleen did not appear until after the fifth week of the disease in any case Enlargement of the spleen is then a late sign and is only of assistance in the diagnosis of chronic cases who may come under observation late in the disease Hepatic tenderness, although most often seen in chronic cases is occasionally an early sign in acute cases

Central Nervous System —In a very large number of cases all the superficial reflexes are increased In the nervous form there is also marked hyperæsthesia of the skin, which is so marked in some patients that they can scarcely bear to allow the bedclothes to cover them The knee-jerks were exaggerated in 87 per cent of cases This is a very valuable sign in differentiating between typhoid fever and undulant fever for in the former the knee-jerk is usually sluggish Some of the nervous cases suffer from marked photophobia and numbers of them complain of other sensory disturbances, such as loss or distortion of sense of taste and smell tingling or itching of the skin, numbness of the palms and soles of the feet &c

The Temperature —Of the seventy-five cases seen in Malta, forty seven ran an undulatory form of pyrexia at some time or another but in some of

these the temperature later became [illegible] In forty four cases the temperature remained undulatory throughout the illness one of these being a "pneumonic form Three cases in whom the temperature was at first undulatory, passed into the chronic state and the temperature then became intermittent This distinctive pyrexia of undulant fever of the Mediterranean is one of the most constant signs to be present This type of pyrexia which caused the name undulant fever to be given to this disease is so characteristic that it is almost true to say that practically every case running this form of pyrexia could be diagnosed correctly in the third or fourth week of the disease by inspection of the temperature chart alone No words of mine will describe this peculiar form of pyrexia as well as those of Osler [27] "Clinically the fever has a peculiar irregular temperature curve consisting of intermittent waves or undulations of a distinctly remittent character These pyrexial waves or undulations last as a rule from one to three weeks with an apyrexial interval lasting for two or more days " This description of Osler's is so concise, and yet so complete, that there is very little to add to it This regular irregularity of the temperature curve is, however, sometimes interrupted by a sudden unexplainable rapid rise in temperature which may or may not be accompanied by a rigor The too free use of drastic diaphoretics will destroy the symmetrical nature of these curves on the temperature chart and in this way conceal one of the most valuable signs we possess in the diagnosis of this disease I have already described the intermittent type of pyrexia sometimes seen in undulant fever it was present in 28 per cent of my cases, which included six chronic form and fifteen "intermittent form " This type of pyrexia is usually associated with the most severe cases

Pulse —There is nothing characteristic about the pulse The rate is usually proportionate to the height of the fever

Blood —In 60 per cent of cases there was a leucopenia with relative lymphocytosis Generally there is a reduction in the number of the large mononuclears In chronic cases although the leucopenia persists, the lymphocytosis is replaced by a relative increase of the polymorphonuclears and in the terminal stages there is an actual leucocytosis

Urine —In the acute stage is scanty high colored and, in nearly all cases contains urobilinogen in excess of the normal This is more often the case after a patient has been kept on a very low diet for some time or if aspirin has been exhibited Febrile albuminuria is comparatively rare

Below are two tables The first shows the total number of cases, the number of cases of each form of the disease, and the relative severity of each as judged by clinical observation In the second table, the percentage of cases in which the various signs and symptoms were present in my Malta cases is compared with those published by Hardy for his Iowa cases This table gives a very comprehensive idea of the differences to be found between cases due to infection with *Br melitensis* and *Br abortus*

TABLE III

	No.	Very severe		Severe		Mild	
	No.	No.	%	No.	%	No.	%
[illegible]	13	1	1 3	93	11 0	3	12 0
[illegible]	1	12	15 0	3	1	—	
[illegible]	1	3	4 0	1	1 1	—	
[illegible]	1	—	—	—	—	1	1 3
[illegible]	0	—	—	—	—	0	0
[illegible]	0	1	8 0	—	—	—	—
[illegible]	[illegible]	33	29 3	97	10 1	4	[illegible]

[illegible] IV TABLE [illegible] SIGNS AND SYMPTOMS

		[illegible] cases [illegible]	Malta cases [illegible]
	Weakness	90	86
[illegible]	Sweating	84	80
	Chilliness	77	64
	Rigors	36	36
	General aching	48	51
	Headache	63	64
[illegible]	Backache	47	36
	In back of neck	28	50
	In joints	33	[illegible]
[illegible]	Anorexia	73	11
[illegible]	Constipation	53	70
[illegible]	Cough	44	[illegible]
	Signs—		
	Fever	100	100
	Loss of weight	90	Not known
	Enlarged spleen	53	[illegible]
	Abdominal tenderness	20	20
	Leucopenia	50	40
	Increased knee jerks	Not stated	[illegible]
	Normal knee jerks		11
	Sluggish knee jerks		30

Fatal Cases.—During my time in Malta I only saw four cases that ended fatally. Two of these were infants and death occurred in the second week. In both cases there were signs of capillary bronchitis, and hyperpyrexia with convulsions occurred. Of the two adult cases both were in the severe chronic state one had been ill for two years and the other for thirteen months. In the first of these, death took place without any definite clinical evidence of any complication and appeared to be due to sheer inanition. In the second there was evidence of chronic nephritis, myocardial degeneration and hepatitis. Hardy [15] reports eight deaths in his 212 cases. In five of these death occurred without clinical evidence in one without pathological evidence of any complication. There was involvement of the cardiovascular system in three instances two of which revealed evidence of malignant endocarditis and in the other, there was an abscess in the lung. Beastrup [3] describes a case in which the immediate cause of death was uræmia. Scott and Saphir [37] reported the isolation of *Br. abortus* from a patient whose illness of nine months was ended fatally by endocarditis with embolic phenomena.

Complications and Sequelæ.—As might be expected since this disease

is primarily a bacteriemia, almost any [illegible] of the body may become involved in the infection A classified list of the possible complications all of which have been described at some time or another is shown below

Nervous System —Encephalitis, meningitis myelitis, and neuritis

Respiratory System —Pleuritis, bronchitis, pneumonia, and pleural effusion

Vascular System —Pericarditis, myocarditis, endocarditis, phlebitis and embolism

Abdomen —Peritonitis hepatitis, pancreatitis and perisplenitis

Glands of Internal Secretion and Racemose Glands —Parotitis, thyroiditis inflammation of salivary glands

Genito Urinary System —Nephritis, vesiculitis orchitis, and ovaritis oöphoritis, endometritis urethritis, cystitis, pyelitis, prostatitis

Connective Tissues —Osteitis, osteomyelitis, periostitis, arthritis myelitis and fibrositis

Clinically it is possible to divide this list up into those complications that tend to appear early and those that appear late The commonest complications of the acute stage of the illness are those affecting the generative organs the thyroid, parotid and other salivary glands, and also the respiratory system The late complications which are most common are neuritis, fibrositis, and all those mentioned under the heading of vascular system, especially phlebitis It has already been stated that complications are comparatively rare except in the very severe or in the chronic or relapsed cases and they are much more commonly seen in a relapsed case than in a primary acute case Such complications as hepatitis and nephritis are usually only seen in the most severe form of chronic case

(*To be concluded*)

REFFRENCES

[1] Alfieri-Cocuzza (1922) *Bull et Mem Soc Med des Hôp de Paris* xlvi 998 1001
[2] Arnold (1928) *Inter Journ Hyg* viii 604
[3] Baastrup V I (1928) *Ugesk f Laeger* xc 457 459
[4] Bassett Smith P W (1912) *Journ Hyg* Cambridge, England xii 491 505
[5] Beattie C P (1932) *Lancet* i 1003
[6] Bruce J W (1891) *Irish Journ Med Sci* April
[7] *Idem* (1932) *Journ State Med* xl No 2
[8] Carpenter C M and King M J (1929) *Amer Pub Health Assoc* N Y pp 54 58
[9] Craig C F (1905) *Internal Clin Philia* 15th Ser iv 83 115
[10] Dudley S F (1931) *Lancet* 1 No 13 Milroy Lectures No 3
[11] Dujani P (1932) *Arch Inst Pasteur de Tunis* xv 397
[12] Kelly A (1932) *Trans Roy Soc Trop Med* xxvii No 2 pp 147 172
[13] Pitch C P Delez A I and Boyd W L (1930) *Journ Amer Vet Assoc* Detroit Mich lxxvi 17 24
[14] Giuffri M (1927) *Pediatria* Napoli xxxv 745 858
[15] Harry A V (1930) U S T D Pub Health Reports xlv Part II No 41 pp 2433 2474 and No 43 pp 2535 2607

[16] Hasselrike H P [1] U S T D Pub Health Reports xlv Part II No pp 1660 1653
[17] Hearns M L (1937) Mediterranean Melitensis or Undulant Fever Macmillan & Co London and New York
[18] Huddleson I Forbes and Orr P F (1929) (a) *Journ Amer Pub Health Ass* N Y pp 31 38
[19] Huddleson I Forbes and Hallman, F T (1929) (b) *Journ Infect Dis* Chicago xlv, pp 392-503
[20] Huddleson I Forbes (1930) *Journ Amer Med Assoc*, 94
[21] *Idem* (1933) (a) *Amer Journ. Pub Health* xxii No 9 September 1931 pp 917 921
[22] *Idem* (1933) (b) *Journ Amer Vet Med Assoc* lxxxii No 1 pp 15 20
[23] *Idem* (1933) (c) *Amer Journ Trop Med* xi No 5 pp 485 504
[24] Kristensen M and Holm P (1927) *Zentralbl Bakt* Journ I Abt Orig cx 1 81 11
[25] Meegan W F (1933) *Lancet* i 1067
[26] Nicolle C Burnet F and Conseil I (1933) *Compt rend Acad d Sci* 1 lxxvi 1031-1036
[27] Osler Sir W and McCrae T (1920) The Principles and Practice of Medicine pp 192 194
[28] Otero Pablo M (1928) *Porto Rico Journ Pub Health and Trop Med* San Juan v 141 157
[29] Owen S A and Newman H B (1915) *Lancet* London ii 536 538
[30] Pandit S R and Wilson G S (1932) *Brit Journ Hyg* xxxii No 1 pp 45 54
[31] Priestley A B (1925) *Lancet* i 1270
[32] Ratsford B G (1933) Journal of the Royal Naval Medical Service, xvii, No 4, pp 233-244
[33] *Idem* (1933) *Ibid* xix, No 1 pp 1 14
[34] *Idem* (1933) *Ibid* xix No 3 pp 97 92
[35] *Idem* (1934) *Ibid* xx, No 1, pp 24 34
[36] Rowlands W I (1933) *Vet Rec* xii 127
[37] Scott, R W, and Sapiro C (1928) *Amer Journ Med Sci* Phila clxxv 50 68
[38] Simpson W M and Fraser E (1929) *Journ Amer Med Assoc* Chicago xcii 1958-1963
[39] Smith J (1912) *Brit Journ Hyg* xxxii 354
[40] Thomsen (1931) *Israel Journ Med Sci* December 1931
[41] Vamei V (1925) *Journ Amer Med Assoc* Chicago lxxxv 934
[42] Wilson G S (1930) *Lancet* ii 928 932.

MODERN TREATMENT OF INJURIES WITHOUT A MASSAGE DEPARTMENT

By Surgeon Lieutenant Commander James Simpson, M A M B M R C P R N V R

In the years since the war the lay public have shown an increasing interest in and given a great deal of support to lay practitioners of osteopathy and manipulation The medical profession as a whole is to some extent responsible for this tendency because they have turned a deaf ear to those of their number who have studied and realized the value of manipulative methods

In the medical schools of to day there is so much in the curriculum of Medicine and Surgery for the student to study that the detailed treatment of sprains and torn muscles is passed over rapidly with a brief word as

exemplified by [illegible] The part should be supported for ten to fourteen days [illegible] may be started

It is impossible to realize without personal or clinical experience how incapacitating and painful these sprains and strains may be the pain of the original injury often lasting for years, after which the resulting fibrositis is a constant source of discomfort for the rest of the patient's life

The old principles of surgery, which stated that the part should be put at rest until healing has taken place were formulated when the standards of bodily efficiency and health were much lower than they are to day, and when the time taken in the cure was by no means such an important economic factor

It is certain that in the days before modern methods were introduced, patients recovered but I think it is equally certain that they took much longer and probably never reached that state of efficiency which is so necessary for life to day, both ashore and afloat

All injuries due to mechanical trauma have, fundamentally, the same pathology and for the sake of clearness we will consider the pathology of a hæmatoma in the quadriceps group of muscles This injury may be caused either by a violent contraction of the muscles which ruptures some of the fibres blood vessels and lymphatics, or by a direct blow, so that a swelling occurs consisting of blood and lymph

The blood coagulates and forms a semi solid mass with a fluid centre consisting of serum and lymph with a periphery of fibrin and blood cells, this mass will act as a foreign body and a small round cell and fibrous reaction will occur around it

This periphery will gradually harden till, after some months, we find a hard fibrous mass with a fluid centre

Now this mass can only be removed completely by two methods (1) surgery, (2) by phagocytic action

The first in most cases is impracticable and the second does not get a chance, because in most cases the organization of the fibrin is ahead of the phagocytic action, so that the mass is surrounded by an impenetrable barrier It is for this reason that after an injury we commonly feel a hard mass in the muscle, which is practically impossible for the white cells to absorb owing to its hard outer coat

Two other effects are observed very constantly in injuries of this type (1) pain when the surrounding muscle bundles contract, (2) wasting which occurs to some extent as a result of disuse to avoid pain, and also primarily as in neurotrophic reaction due to the presence of the irritating mass

Now these same essential features (1) the locking up of the products of injury, (2) pain, (3) wasting of muscles and laxity of ligaments occur with absolute regularity to a greater or lesser extent in every injury, whether it be to ligament, joint or muscle and it is to combat these conditions that modern methods have been evolved

In the [illegible] joint the same arguments apply For example the common spiral strain of the capsule of the knee joint, there is often a very considerable secretion of synovial fluid from the bruised synovia and just as in the case of hæmatoma of the quadriceps the surrounding tissues, although not as hard and fibrous as in the previous case, are not in a state to absorb the fluid and wasting of the muscles and a laxity of the ligaments develops.

If the knee is fixed for a long period synovial fluid which often has a considerable amount of blood mixed with it coagulates and fibrous adhesions are formed between the layers of the synovia, sometimes as fleshy bundles or small hard bands these bands hold up movement and give pain (These cases are the happy hunting ground of the Osteopath, he breaks down the adhesions, frees the joint and relieves the pain) These adhesions should never have been allowed to form

The wasting of the muscles occurs from disuse and on account of the disturbed neurotrophic mechanism By exercises and faradism this wasting can be checked to a very great extent in the early stages

In the ligamentous injuries the same three axioms apply Let us consider the common inversion strain of the ankle when the external lateral ligament is torn In this case the traumatic effusion, as we may term the extravasated blood and lymph, cannot form a roughly spherical mass, neither does it get into the joint to any great extent, but remains over the ligament (in fact it is the swelling which is so commonly seen in these conditions)

After a day or so it spreads down so that it may be seen along the whole outer margin of the foot

The wasting of muscles is not so easily observed in these cases as the peronei (the chief group involved) are deep seated, but it will be found that in neglected cases the electrical reaction becomes quite sluggish and that owing to this lack of support from the peronei flat foot may occur sharp pain is felt on inversion of the foot, and on actual limitation of movement is found due to the formation of adhesions between the layers of the torn ligament

The treatment of all injuries to the soft parts (with a few exceptions) can be easily worked out from the principles outlined for the three types of injury which have been discussed above , to wit a muscle torn , a sprained joint with effusion , a ligamentous injury

Treatment may be considered under three headings (1) dispersal of the traumatic effusion , (2) maintenance of muscle and ligamentous tone (3) prevention of adhesions and limitation of movement The methods which will be described in the treatment of these injuries may be considered under : (1) rest (2) support (3) counter irritation (4) massage (5) passive movement and exercises , (6) active movement without weight bearing (7) graduated exercises and weight bearing

The Quadriceps Muscle Injury

In this condition the part need be rested very little in fact, as little as is possible probably, owing to pain, the patient will be unable to walk about much for the first twenty-four hours

A firm support of elastocrepe, elastoplast, or semiplast will be found to be of great value, as the encasing of the limb in a firm bandage will mean that each time the muscles contract the part is massaged and the effusion spread into the healthy parts where absorption can take place more readily

Counter irritation with antiphlogistine or liniments will liquefy the hæmatomata and cause vasodilation thereby helping absorption

Active and passive movement and faradism (the method of application is described later) may be started at once as two useful purposes are served thereby (*a*) the maintenance of the muscle tone and (*b*) the dispersal of the effusion which prevents the formation of a hard organized hæmatome

After about seven days, graduated exercises, such as lying on the back and lifting the legs, and, later knee bending and raising may be started, these will increase the strength of the muscles but what is much more important will prevent adhesions which may lead to permanent disability and pain

In the case of the knee-joint injury with effusion, the same methods of treatment may be applied, but rather different values should be set on each one

The knee must be rested comfortably preferably on a back splint or with a firm bandage till nearly all the fluid has gone; this may take from seven to fourteen days Counter irritation with Scott's dressing or antiphlogistine may be applied

Once or twice a day the bandage should be removed and the knee put through as full a range of movement as the pain and fluid will allow

Not only flexion and extension but rotation of the tibia on the femur and antero posterior movements should be carried out

One of the chief characteristics of any knee-joint injury is the rapidity with which the quadriceps waste and loose their tone This tendency can be checked to a great extent by massage and by teaching the patient to twitch the muscles with the knee extended These methods will do a great deal to obviate wasting however, if a faradic coil is available it can be used with very great benefit in these cases

In from seven to ten days it is probable that the leg will be able to be used When walking is first started the knee should be supported with a crepe bandage

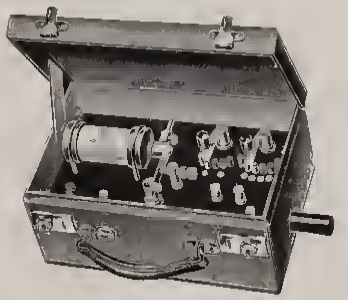
The faradic contractions, muscle twitching, and such exercises as the goose step and heels raise and knees bend, should be continued the while in order to prevent muscle wasting

If a recurrence of fluid occurs the knee should again be rested and only moved once or twice in the day and not used at all for weight bearing

The last type of injury which we will discuss is the inversion strain of the ankle-joint (In these cases it is wise to X-ray the part as a chip of bone may easily be removed from the external malleolus)

An evaporating lead lotion compress should be applied and changed every three to four hours and the foot rested for the first forty-eight hours after which it may be strapped with adhesive zinc oxide plaster care being taken that the foot is held in a dorsiflexed and everted position when the plaster is applied, gentle rubbing over the plaster and active movement of the toes will greatly assist the disparsal of the traumatic effusion

Further, if a faradic coil is available the feet may be placed in baths with one electrode in each and stimulation given



Walking can be started practically at once; a small wedge of leather may be inserted into the outer side of the heel of the affected side, this will further relieve the external lateral ligament from strain

After two or three days the strapping should be removed and movements, both active and passive and massage carried out The ankle should be flexed and extended inverted and everted and the astragalus pulled backwards and forwards on the tibia

The mid-tarsal joint should be moved to its utmost range the tarsal bones moved on one another and then plaster reapplied for a further two or three days If the ligament has been torn externally it will be advisable to continue using the plaster for fourteen or more days

As the part strengthens elastoplast may be used instead of the firm adhesive plaster and finally a crepe bandage may be worn

In this article constant reference has been made to the faradic coil as it is felt that this is such a simple and inexpensive piece of apparatus that it might well find a place outside the massage department

It consists of a dry cell battery an interrupter a small transformer with a movable core [illegible] the strength by moving this core in and out the strength of the [illegible] can be varied at will

The patient is made to sit on a large electrode consisting of zinc which has been covered with lint soaked in saline, the other electrode is moved about over the muscles to be stimulated

The parts where stimulation is best applied are known as the motor parts and can be seen in many standard textbooks or discovered by experience.

To use the apparatus the fixed electrode is put into position the coil is turned on and the interrupter started The movable electrode is placed on the area to be stimulated and the core gradually pushed in until the muscle contracts it is then withdrawn to allow relaxation to take place these contractions should be made to take place about fifty times a minute

Of course if the bath method is used each electrode is put into a papier-mâché bath and the same method applied

In conclusion, one would stress the fact that there is nothing complicated or difficult in the treatment of injuries and that a massage department although a useful adjunct is by no means essential

If the three axioms of treatment, (1) the dispersal of excess traumatic effusion (2) the maintenance of muscle and ligaments (3) the prevention of adhesions and limitation of movement, are kept constantly in mind I feel convinced that the results obtained will be extremely gratifying and will save many months of pain and disability

Those who are interested in this work will find numerous works on the subject but I feel that the Treatment of Injuries, by W E Tucker will probably prove most useful to those who have to treat many injuries without the help of a massage department

[I would like to thank the Medical Supply Association for the loan of the block of the Smart Bristow Coil.]

DIAGNOSTIC AND OTHER EXPERIENCES WITH SPECIAL REFERENCE TO PLAGUE.

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An experience for purpose of this paper is an actual observation of events To write experiences is essential egotism should this appear, I fall back on the definition by way of apology, wherever happily it does not, the reference to any incident is still strictly from observation of an event

A boy appears in the surgery with his mother, she asks for salts and

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senna as Tommy has a stomach ache The boy looks pushy, he is found to have two years history of stomach aches a temperature and a tenderness in the belly The directions were that the boy was to be put to bed and be given an enema and the results, as described in my visit an hour later, were, first screaming pain at the splenic flexure then at the sigmoid region, then in one and that the boy drew out a piece of corroded steel This was 2½ in long and sharply spiked at one end part of a rather thick knitting needle possibly

In a ship from the tropics the diseases from which the complement suffers are not necessarily exotic diseases, indeed they rarely are, but there is always a chance that the odd event is staring us in the face

Obviously a port sanitarian does not see arresting cases every day, the pars to his sensorium are only occasional but it is useful practice for him to consider these as they occur to store them for future use and above all to keep the sensorium bright If nothing of particular note occurs to him in a week, a month, a year the eighth, the twenty ninth, or the three hundred and sixty sixth day still await him

One is opposite a case of small pox and says "You are all right old chap, it is only a few spots you will feel quite well in a few days A little nurse almost unqualified as nurses go these days but really a jewel plucks your sleeve and whispers I smell hæmorrhage To pooh pooh a nurse is not outside experience This 'mild' case of small-pox died that night of hæmorrhage from every pore. Later a man undergoing enteric fever collapsed, quite mildly, and the same nurse nodded her head She said she thought the smell came with his breath and also possibly from the skin The hæmorrhage appeared three days later black and tarry Three days later! of what use in this case is the ancient treatment thist a starch and opium enema be given at once? None! but rather the administration of a drop or two of turpentine and a cleansing of the bowel against fermentation in that portion of the culture medium remaining, since distention might easily be a very real prelude to catastrophe A further case this time also of collapse in an enteric fever patient, entails a mutual nod and a still further case enables one to say confidently This patient is bleeding or more hopefully has bled and the nurse again agrees

All this presupposes that the smell of a patient with enteric fever is already well known No, doctor, this case is not one of appendicitis it is enteric fever with the head inside the cabin it has been possible to say this in correction of a surgeon's diagnosis If the smell does not appear the negative proves nothing as usual So much for the smells of hæmorrhage and enteric fever, still sides hues in port sanitation though not so frequently as when ships took water from American rivers at too close a point to the towns

The International Convention on ship borne disease deals with plague yellow fever, cholera and then small pox and typhus fever Small pox is naturally a bugbear to the medical officer visiting a ship, even without the

[illegible] minutes to make up his mind [illegible] stopped and the curtain raised [illegible] and demurrage of ship, or [illegible] go forward to dock at his risk. Therefore he must know the differentiation between chicken pox and small-pox to such a point that other experts also would be puzzled over a case. If he is puzzled he must play for safety.

If, while the doctor stands with the nurse before a patient who presents one papule in the clavicle and another on the upper arm, and is a contact with small pox, there is a simultaneous exclamation 'Oates!' this clinches the diagnosis of small-pox which can hardly, at the moment, be fully made on the other grounds. Oates is the name of the small-pox patient preceding this one, and Oates presented such a characteristic smell that it was still in the nostrils of both observers. The exclamations were exactly simultaneous or they would have been valueless. For diagnostic purposes two noses like two heads, are better than one. Small-pox then, like diphtheria, has a smell which is characteristic when present. Called in consultation in the town, one might be able to say on entering the front door, 'Oh yes, there is small pox in the house.' This is not the smell of pustule but of the early case (who, in going down the road has not noted the difference in scent between trashed hazel and cut bracken in the hedge?)

The *Castalia* and *Atlas*, the old small pox ships, showed me five hundred cases in the epidemic 1901-02. I still was bewildered until Wanklyn, who sent back into London scores of cases of chicken-pox which had been diagnosed as small pox, published the data on which he relied for this bold procedure in one of the medical journals and later more amply in book form.

Wanklyn's chief points for diagnosis were: (1) That small-pox rash is peripherally distributed—e.g. equal areas of forearm, arm and chest will have the rash in diminishing quantity; (2) that exposed surfaces taking rubefaction during the period of invasion from whatever cause (unwonted light rays, friction, &c.), will have a relatively heavy incidence of the rash; (3) that the depth of the small-pox lesion in the epidermis determines a strictly circular outline under the hydrostatic pressure of vesiculation.

The habit of the patient during the period of invasion sometimes determines large patches of confluence. The use of a hair wash (presumably containing cantharides) was so obvious in one patient because of the thick seeded small-pox points just appearing on his scalp—as if he had been punctured by every bristle of the hair brush—that I asked him what he had been rubbing into his scalp, not whether he had rubbed anything in. A growth of fine hair aided in the putting of this question, but such a thickly sown crop of spots is very rarely seen, especially at the pin-point stage of evolution. This patient's life was saved after the severest of illnesses by his vaccination in infancy.

A confluent crop over the front of the thighs in another patient was

acquired by [illegible] sitting position and resting his arms on his thighs in utter weariness while waiting for the painful stage of invasion to pass over This position seems to have afforded the greatest relief to be obtainable in a locale

In a third case, confluence on the lower part of the face and neck ending abruptly at the blouse collar on the back of the hands ending abruptly at the wrist bands, and on the feet ending similarly below the ankles, was determined by the fact that the patient had been gardening in the sun in a large shady hat and a new pair of shoes Further in this case the trowel modified the rash on the palms, and a carbolic gargle that in the mouth and throat There were only a few scattered spots on the whole of the body and legs otherwise It seems that a burst of spring sunshine in a dull period which coincided with the malaise of invasion determined confluence and the death of this patient in the absence of any vaccination

Such marked cases should not mislead they just over-emphasize the fact that prominent ribs shoulder blades, shoulders cheek bones, eyebrows, chin, nose, &c , fortuitously catch a rub and rubefaction denied to armpits and the abdomen below the umbilicus and the distribution of even a discrete rash in an ordinary case follows somewhat this chance rubefaction

If a patient presents a "scarlet fever rash and the legs from the groins down show a "measles rash he can be suffering from small pox with a prodromal mixed rash perhaps the more usual prodromal rash ends at the upper thigh Mistakes are easily made by piecemeal examination instead of viewing the body as a whole, indeed the examination of a doubtful rash is not properly made without this comprehensive view

While putting in time on a Continental boat on which there was nothing for me to do, and the deck my sole *locus standi* a lady passenger commanded attention as being the only person wearing gloves and a veil On close examination she disclosed a face temporarily marked and palms in which were those strictly circular deep pips of inspissated pus diagnostic of very recent, or even present small pox The lady was disinfected and released after twelve hours The pips were opened by needle and the inspissated discs removed from palms and soles as antecedent to the prolonged izal bathing to which she was subjected She had been acutely ill and had received treatment for her blood the disorder of which manifested itself after a few days in an outbreak of peripherally distributed spots on the skin There is a saying "If you can't be efficient be as efficient as you can"

Examination in the old days began with the simple question "Are you all well on board? Answer "Yes yet, at muster, two cases of well defined small pox are picked out from the crew This happens because the examination is systematized The face and wrists of the patient tell something of his fit or unfit condition, and this, with a quick rub down of armpits and groins brings the examiner into sufficiently close contact

with 'the muster' for all his [illegible]. If the ship's surgeon says 'It is a farce' behind your hand [illegible] he is not only wrong but rude; pick him out five [illegible] he knows nothing about and examine them long and carefully with him (meanwhile, of course, the ship is waiting patiently for you to finish before proceeding). They will possibly be due to past or present cracks in the feet or the result of long-standing venereal disease, or even due to climatic bubo. In the end perhaps, the surgeon learns something, and in any case venereal disease is another port side line, and the diagnosis of climatic bubo of importance to the patient when handed on to any surgeon ashore.

By the way good practice at getting at buboes through oil skins, two pairs of breeches, &c., is to place a hazel-nut between the sheets and feel for it through two blankets and the eiderdown. Finding is easy and on practice quick and certain. The man, if the bubo be one due to *B. pestis*, will object, others also will flinch at being rubbed down, even a flinch means something.

As to musters: it is the last man who matters. There are thirty in crew on a tramp steamer; twenty-nine are on muster and are duly examined; the ship is under way, the thirtieth is at the wheel. 'You don't want to see him, come and have a drink.' He was a case of enteric fever the wheel was supporting him. Many pounds and costs from the skipper's pocket and no friendly drink partaken of. Should one never accept a drink on duty? Yes, if offered by the right man at the right time in the right way (there is no need to be churlish). But scarcely if you be twice asked, and with such discrimination as befits responsibility. Moreover, 'in the drink' has a varied significance when the launch sheers from under the ladder and leaves a man halting between two pinions, one on the launch gunwhale and one on the ship's companion.

Five men are absent from muster: they are in the engine room and the ship is under way. Relieve them with five from the examined muster, noting that a cross-eyed man is amongst the relieving five, up comes cross-eyes again. It is the old personation bluff: 'call it.' One wants to see the last man: he is possibly unable to get out of his bunk in which case you go to him. He is the man out of the whole ninety-five you want, or rather need to see.

The first case of plague I ever saw presented an absent pulse and a bubo. Knowing from the book that plague was *par excellence* a heart poison I forecast the worse. My chief, the pulse by this time having reappeared, bet me 5s. against the supervention of *mors*. I never collected that 5s.: it would in any case have gone against the grain and my finer feelings told me it would be a breach of discipline even to allude to the matter. Plague is a heart poison. If the case is diagnosed mumps and the mumps are so severe that the case must be put ashore, do not be surprised if the mumps drop dead before he gets there. If diagnosed malaria or febricula, the same thing is liable to happen.

What are the misdiagnoses in plague cases? Febricula, malaria malignant malaria, enteric fever parotitis cholera? femoral bubo due to gleet and induration

As to simple fever this may be and tentatively is plague on a ship from an infected port or on any ship where plague contact is possible, until and unless the contrary is proved As to bubo, this does not present itself as an essential feature of plague, though commonly and usefully present at some stage if only as a pain locating a future bubo

In illustration, the following cases are germane —

Case 1 —Submaxillary bubo and slight fever in a man caused removal to hospital No sign of a bad tooth On reference to lymphatics in Quain there is depicted an unexamined lymphatic between the inner canthus and the submaxillary gland On going back and looking at the canthus the patient was discharged with diagnosis of very slight subacute inflammation of the inner canthus Without close search of both book and canthus this diagnosis could hardly have been made So slight was the affection of the canthus that it was missed by three doctors at the first examination, but agreed to be present later

Case 2 —Moderate fever not over 100° F for seven days then bipolar bacillus laden sputa massive submaxillary bubo, and death in twenty four hours

Case 3 —Fever and femoral bubo After self immunisation and the temperature had returned to normal a second large bubo appeared in the cervical region, no systematic signs or symptoms accompanying the second bubo

Case 4 —Fever and fine eruptus over the whole of both pleurae and pericardium for four days Great pain and anxiety to patient Femoral bubo appeared at end of fourth day, all symptoms and signs save the bubo disappeared forthwith

Case 5 —Slight fever four days nothing else, ate and slept well, sat up in bed and protested mildly at being dubbed a plague patient Died on fifth day on walking about Post mortem Plague bacteria plentiful in pure culture in a smear of heart blood

The forms of the plague picture are evidently varied Case 1 never really looked like a plague patient but neither did Case 5 When many cases such as No 5 can be described from a small experience of ascertained plague, the dictum must be that even mild fever in a person at plague risk is plague until the contrary is shown

The second case of plague ever seen by me showed the utility of prayer of the Jeremian type My orders on a Friday were to go to the dock and warn the surgeon of s s *Alpha* that the diagnosis of a hitherto missed case is plague and that he should look out for further difficulties On arrival I find *Alpha* as is unusual, had sailed on Wednesday s s *Beta* of the same line is alongside the quay I go on board and find *Alpha* has overlapped *Beta* in dock for three days I chat with the surgeon and decide that the overlap is not a likely source of trouble but would like to see any buboes he has amongst his men A native is led aft and presents a femoral bubo temperature and sorrow perhaps inordinate to the size and appearance of the bubo There are no particular cracks on the foot to account for the bubo The reports of the India Plague Commission were

in those days very meat reading for a Port Medical Officer 'Were there dead rats on board?' "Yes eighty out of No 1 hold" After all, this was a long time ago. Even plague conventions were somewhat tentative on the matter of rats. At that time a rat mortality on board did not make a ship either suspected or infected by definition in the current international convention and what had rats to do with the surgeon? If he happened to have gathered knowledge outside his curriculum and his preconceived or apportioned duties he might even get rapped over the knuckles for interfering. The case was removed on a suspicion which was perhaps more proper than deeply felt, the case proved to be one of plague, the symptom group was fever, bubo and dead rats the connection between the *Alpha* and *Beta* cases was that each ship had taken part of the same particular seed cargo from the same place abroad, complete with rats, into its No 1 hold Now the man in question on the *Beta* was he who went down regularly into the hold, to the upper "tween deck to fetch food for the native crew, and he was the only man exposed to infection and to develop the plague Food rat man food store dead rat human plague case I pondered over this natural association for years and years it was so natural It was one link which eventually coupled itself with others into a long chain

A marked case of this association arose in s s *Gamma* This ship had a complement of 469 passengers and crew five cases of plague occurred on board, exclusive of those in rats These were, a steward who lived in a deck house forward, two natives of India who were housed in the upper 'tween deck forward and an engineer who resided in the after part of the port alleyway amidships A store room was reached from the alleyway by a stairway situated opposite the engineer's cabin door From this store room many dead rats were thrown out on the voyage Persons entering the store room were the steward aforesaid and one of the native ratings, the other native was lavatory man in the port alleyway, this being the nearest water for the rats of the store room The engineer's room was opposite the store room stairway, and like that adjoining, could be fumigated, as was subsequently found through No 4 hold by way of holes between the deck and ship's plates, the store room communicated with this hold by a louvred door

The store room stairs were presumably a path of communication for plague from No 4 hold The fifth case was the cat—the store-room cat—cervical swelling and illness coinciding with that of the steward

Another marked case was that of s s *Delta*—complement 59 Cases of plague steward, steward's assistant, gunner, signalman, and lamp-trimmer The store room was in the poop, dead rats were thrown out from the store by the steward, or rather on general grounds probably by the steward's assistant, on complaint of a smell by lamp trimmer gunner and signalman A lute silo floor of this poop quarters was made more comfortable for gunner and signalman (the lamp-trimmer had no business there) by wood laid on battening, good nesting and easy food for rats, what more could they have?

One thing more was required The ship's manifest showed only boxed and barrelled, &c, cargo in the hold stuff that rats could not get at I ventured an opinion there were no rats in the hold, and was laughed to scorn considering that the engineers used to sit on the boat deck ladder and feed them as they came out of No 4 hold I examined No 4 hold and found a greens and potato locker—i e water—in the upper tween decks This completed the requirements The five cases of plague on that ship were all associated with the store room Only sixteen rats were found on fumigation total rat history twenty eight On deck search being made while fumigation was proceeding, three of the twenty-eight rats jumped out of the winch barrel, a hidey-hole I would not have suspected

S.S *Zeta* is interesting from the diagnostic point of view, and otherwise The surgeon was as cheery, helpful and discerning a fellow practitioner as any Port Medical Officer could wish to meet and trained at the best hospital in London Seven cases of "influenza" in the foc's'le all on one side, all from the deck crowd A colleague Port Medical Officer diagnosed plague on a femoro inguinal tenderness in one case Now does influenza centre round one spot in a ship? Does it not rather circulate itself then necessitate a visit to one spot for infection?

On another ship a solitary case with death was diagnosed influenza by several doctors The ship had had a rat mortality on the outward voyage when this case occurred and presented several cases of plague in the crew on arrival back in English waters It is pertinent to consider whether influenza in its epidemiology is likely to confine itself to one foc's'le or to one case on a ship I think not and probabilities must take their place in diagnosis. To return to the *Zeta*—hot on the old point of the relation of food store and plague which one can as usual postulate after demonstration I requested that the captain would listen and corroborate while I told him all I did not know about the state of the lascars and of his ship He agreed, and the conversation ran something like this —

Q "You have seven cases of plague on board?

A "Your doctor says it is plague

Q 'These cases are all in the starboard foc's'le?'

A (With a chuckle) "No, all in the port foc's'le

Q "On this ship then, the food store hatch opens into the port foc's'le? The only ship of this line in which that arrangement exists

A (Surprised) 'By Jehosophat' It does but it is not the only ship"

Q 'Well not usual, is it? But the man who died coming up Channel, he was the man who issued the stores?

A "He was the storekeeper

Q 'And the moribund man, he had some relation to him?

A He was his assistant

Q "You have dead rats in your food store?

A "Call the bosun' "Any rats in the food store bosun?" 'No, sir

That answer was from want of knowledge or may be of the 'Sure, didn't

[illegible] would [illegible] type The two men who [illegible] the rats were [illegible] dying The surgeon was [illegible] in hour or so by the sight of [illegible] under the [illegible]

A bonus once stumbled [illegible] rats caught alive after the fumigation of a plague [illegible] matter cleared when it was understood that his standing with his [illegible] and in the ship depended on his zeal in following up the rat [illegible] er was not to be foreseen by him I forgave him the brush [illegible] and the splendid malacca cane the chief gave me as a happy memory of our association is still extant adorned now with [illegible]

One plague ship afforded a curious set of circumstances She arrived with declared cholera on board Her history purported one death malignant malaria (malignant because of death, not by microscopy) one death from parotitis one death after five days diarrhœa and vomiting, one man dropped dead on deck from cholera (without diarrhœa) and two cases of femoral bubo nine to eight landed at Malta They were certainly femoral, the operator informed me because on opening one of them he had to think of the saphena vein On further gleaning passengers had objected to the cat which had a swollen neck and disappeared for a few days to re appear with pus on the fur of its chest and was duly jettisoned

This history shows a bewildering riot of misdiagnoses in which it is hard to find reason But it does raise the subject of lymphatic drainage areas to its true level of importance femoral bubo being commonly found in plague and never in cholera The case of sudden death from cholera without diarrhœa was quite enlightening and yet how far would that epidemic have gone undiagnosed even with an expert surgeon? There is no knowing it is all different after the event

From a knowledge of seven plague-infected ships we may gather that a very good starting point for diagnosis of the human plague case is the finding or history of an associated dead rat that out of 1 534 persons presumably at risk these seven plague-infected ships there were thirty cases of human plague, that nine of these were amongst known store keepers of food that seven storekeepers were amongst the first cases to occur on the various ships and that many more of the early cases had association more or less direct with store rooms that, in the absence of knowledge of the rat should ill defined illness occur in the storekeeper or people who have dealings with holds plague as becomes its importance should be considered in the diagnosis before influenza or mumps, that the regions of the body drained by the lymph glands affected should be known and carefully searched for causes of infection or their absence that if the ship's surgeon and the Port Medical Officer pool their wisdom and knowledge the best results are attained and that people whose business leads them into food stores are the people who best know the rat mortality on a ship and are those from whom the inquiry as to rats should be made.

How many flea-bites are required to determine a case of plague in man? Very few I imagine because my late chief acquired a parotid bubo otherwise unaccountable from an incautious entry into a highly plague infected corner, and his stay there did not last half a minute nor is it in my recollection that he spoke of having been flea bitten A man who disinfected the clothing of the missed case on s s *Alpha* said that the ditty box was leaping with fleas and did complain of being bitten Four days later he presented first submaxillary pain, then a bubo of large dimensions on that side A peculiar thing about this swelling was the subsidence about the gland and the continuance for a day or two of a ring of œdema and blush on the cheek and neck almost as if the periglandular infection and infiltration had produced local immunity against the bacillus in the part affected and was moving out like a fairy ring After these incidents any plague case taken ashore should be stripped and wrapped in flea free blankets against at least the worrying of the nursing and disinfection staff and also the responsible doctor lest loose plague fleas be also taken ashore and bite as is their wont and necessity in life Similarly textiles from a place known to be infected before taken ashore for disinfection should be subject to a preliminary flea disinfestation on board

Auto-immunization appears to occur in favourable cases in about four days from the first sign of fever—102° 101 100° 99° nightly then finish is a common history of the septicæmia of plague

I have travelled perforce from diagnosis in man to that in rat and the interdependency of both The large spleen marbled liver pleurisy, peritonitis, petechiæ and one or more hæmorrhagic glands is a post mortem picture of a rat dead of acute plague More convincing still is an enlarged spleen, with or without one or more of the above findings which yields the typical bipolar bacilli on film staining most convincing of all the stalactites of culture and general fulfilment of Koch's postulates

International obligations demand demonstration up to the hilt The Port Medical Officer must of necessity 'jump to it' it is for him, however to supply during his leisurely hurry, the fullest possible and the most likely material to those who have the international responsibility for the diagnosis Meanwhile a rat mortality should send him to a methylene blue pot and flea comb whereby, with but little trouble and very ordinary methods he may at least have the satisfaction of noting bipolar bacilli in pure culture, and that *Ceratophyllus fasciatus* has a very fine dog collar denied, though not entirely to the picture of *Xenopsylla cheopis* Picture? yes in those latitudes of cold humidity except by luck or very definite and protracted search A rat which is sick from tapeworm obstruction can harbour hundreds of fleas in its coat a young or otherwise vigorous rat often none whatever may lurk in its nest

As to typhus fever the international effort at confining this disease to the East of Europe after the war leaves a Port Medical Officer in England nothing to say on diagnosis

Of yellow fever much the same can be said Except that I once advised a Medical Officer by cheek and telegram to look for the signet ring in the blood corpuscle of a suspected case The said Medical Officer had already done this and had made his find Forcados on the Dukar peninsula, at which port ships exchanged the gun during the war, is worth examining on a large scale geographical survey map as being a place *par excellence* at which to start a mosquito hunt, or to run away therefrom Wait there for a gun, and a whole ship on arrival in England might become a casualty clearing station on account of malignant malaria one took off the yellow the comatose, and the lightly fevered and quinimized the remainder on board, and did some more ordinary but successful microscopy I must insist on the microscope of course the backing of a pathologist is essential when the case is difficult, or the findings of importance, but the early warning is worth while to a Medical Officer, and often readily obtained

When will opportunities for the exercise of the experience gained come again? Perhaps always and at any moment but most actutely when man in the bulk gets so busy over other matters that he has to neglect the rats of an endemic plague country, and the stocks of food in relation thereto while the same neglect at the same time exists on ships and in the home countries The stage might then be set for pandemic plague transferred by ships My experience include one of 1 470 rats on one ship—just the natural increase of a year s undisturbed nesting and plenty of good food and water for 1½ pairs of rats

But meanwhile, has anything been done to further elucidate the natural history of plague flea and rat, and to break the chain between the endemic foci of plague and on shores? I believe the avenues have been closed

Note—Just one thing more—the ships I have mentioned did not bear the names assigned

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A MODERN POMPEII

The Destruction of St Pierre Martinique on Ascension Day Thursday May 8, 1902, by Volcanic Eruption

By ST GEORGE B DELISLE GRAY F R C S Edin

At the northern end of the island of Martinique there exists a volcano, Mount Pelée, which for many years in fact ever since the island had been known was considered, if not extinct at any rate harmless

About the beginning of April 1902 the Mayor of St Pierre, a town of some 30,000 inhabitants the commercial, though not the political, capital of Martinique, and often referred to as "The Pearl of the Antilles, received a message from the Governor of one of the provinces of one of the Spanish speaking republics of Central or South America telling him that a volcano in his district was active and that there was a Carib tradition

that when this volcano on the mainland was active Mount Pelee also went into eruption The receipt of this message left the Mayor of St Pierre undisturbed Mount Pelee was harmless and he was not going to allow anyone to lose his head and get frightened So with 'Thank you for nothing' the telegram was consigned to the waste paper basket A few days later, however, the small lake in the crater on the top of the Mount Pelee dried up, fissures appeared and fumes and steam began to issue from the cracks Then the cables connecting St Pierre with the outside world broke and when the repair ship *Grappler* of the West India and Panama Cable Company was sent to find and repair the broken ends she was unable to find bottom one thousand feet deeper than it had been found a few months previously Shortly afterwards there was an eruption of unusual violence and the usine (sugar factory) immediately to the north of St Pierre was overwhelmed by a torrent of boiling mud to a depth of some twenty feet and a score of lives were lost The inhabitants began to get alarmed and to leave the town but the Mayor was made of sterner stuff and assured them that there was not the slightest danger and *pour encourager les autres* he placed a cordon of troops round the town and no one was allowed to leave without a special permit from him

About the same time the volcano at the northern end of St Vincent also became active As a matter of fact the eruption in St Vincent was on a much greater scale than that in Martinique but owing to the fact that that end of St Vincent contains no towns the loss of life was much smaller than it was in Martinique

The s s *Roraima* of the Quebec line, on its way south from New York called at St Kitts and the Captain invited my uncle who was agent for the line in that island to come as his guest to see the active volcano My uncle arranged to go with him and stay a few days with us in St Lucia and catch the next ship back to St Kitts His baggage was already in the boat at the pier when a cable from New York arrived and urgent business prevented him, at the last moment, from accompanying the *Roraima* A few days later the ship was lost at St Pierre with very few survivors The *Grappler* returned to St Lucia to report her extraordinary experiences and when she was in Castries harbour on family dined aboard her A few days later she returned to St Pierre and was lost with all hands in the disaster

On the night of May 7 1902, s s *Roddam* a Scrutton line cargo steamer Captain Freeman in command, cleared at Castries for St Pierre and my father, who was a doctor practising in St Lucia, gave her a clean bill of health One of the officers had been bitten by a dog two years previously and had been laughingly told by his friends that he was sure to be drowned on that account He remarked to my father as the latter was leaving the ship Well, doctor, you see I am not drowned yet

At about half past seven the next morning (May 8, 1902), the *Roddam* arrived at St Pierre A vast pall of black smoke from the volcano over

hung the town and anchorage and flashes of [illegible] of thunder came from the crater at each There was [illegible] lady in her bathing as she had called at Barbados where there was [illegible] smallpox, and she was therefore, shifted to the quarantine anchorage at the [illegible] northern end of the roadstead At ten minutes to eight when she had just come to anchor and the agent's boat had come alongside the gangway there was a terrific explosion in the volcano and a cloud of incandescent gas swept down on the town with the speed of a falling body (This was the first time in history that this phenomenon had been noticed, and when reported by Captain Freeman it was thought at first that the horror of the scene had got the better of his judgment and that he had unconsciously exaggerated However, a few weeks later the same phenomenon was witnessed by a scientific expedition on the spot and it was then noticed that it was accompanied by a hail of very small stones The mass of the cloud is thought to have consisted of these very small stones, and this would account for the cloud moving with the speed of a falling body)

Immediately the whole town and all the shipping in the roadstead was on fire. The *Grapplet*, which was close inshore near the northern end of the town was seen to sink like a stone and never a trace of her was found The *Roraima* and the *Roddam* were both on fire but Captain Freeman had only just come to anchor and there was still steam for full speed He ordered the cable to be slipped and rang down full speed ahead *Roraima*, not expecting to sail till the afternoon was unable to get under way and was burnt at her moorings As *Roddam* got under way she passed close to the doomed ship and the two captains waved 'good-bye' to one another

Meanwhile the Company's Agent ran up the gangway on to the *Roddam's* deck He was frightfully burned and died a few days later in Hospital at St Lucia The young officer who had been bitten by a dog dived into the sea which was literally boiling and was boiled and drowned to death

About 4 p m a strange vessel entered the harbour of Castries, St Lucia She flew no flag, had no paint on her sides her upper works were burnt or carried away she had no boats and no rigging left and appeared to have been through an engagement On her deck were seventeen corpses At the wheel stood gallant Captain Freeman, so burnt about the hands that he could not hold the spokes who had been steering for eight hours with his elbows one of the finest feats of courage and endurance the Merchant Service has ever known The *Roddam* was the only ship out of some twenty odd, to escape from St Pierre on that fatal morning

I can well remember, as a small boy being taken by my parents to visit Captain Freeman in the hotel where he was staying in Castries so that I might have the privilege of seeing and talking with a brave man

St Lucia flashed the news to the world Meanwhile, in the island itself dismay and sorrow could be seen on every face The two islands of

St Lucia and M[illegible] [illegible] by the closest [illegible] in many cases also of blood for St L[illegible] had been French until the Treaty of Amiens when she was handed over to the British in exchange for Martinique, which exchange, with vivid memories at the time of H M S *Diamond Rock* was considered very [illegible] business from the English point of view

Among the dead was a lady from St Pierre who had gone to fetch the body of her husband who had died in St Pierre some years previously and for him she had built a vault in the cemetery at St Lucia that the two of them might be buried together They were buried together but not quite in the manner that the widow anticipated for she was returning to St Lucia in the *Roraima* and was among the victims

Next day search parties could find no trace of any living creature Working near the prison groans were heard proceeding from the underground condemned cell This was burst open and the wretched prisoner set free the sole survivor of what, the day before, had been a flourishing town of 30,000 inhabitants He owed his life to the fact that he was condemned to death Truly the irony of fate!

Among the dead was the daughter of an Italian gentleman living in Barbados There was a convent in St Pierre staffed by Parisian nuns to which Europeans who could not afford to send their daughters to Europe to finish their education used to send them Immediately on receipt of news of the disaster, her father chartered a steamer and sailed to St Pierre arriving there some thirty-six to forty eight hours after the calamity To identify his daughter was indeed a difficult task for all bodies were charred beyond recognition marks were obliterated and it was impossible to recognize features About a dozen bodies which might have been hers were examined by the father and only one of them was wearing a certain intimate garment which is worn in the East Indies solely by English speaking people This girl was thoroughly Anglicized and spoke English as if it were her native tongue On the slender evidence of this garment alone was the father able to identify his daughter

The alarm in St Lucia was very great for there were two live volcanoes active, one to the North of Martinique the other to the South in St Vincent and we were exactly in the middle and possessed an extinct volcano La Soufriere Alarm was still further increased by the fact that a steamer arriving in Castries reported that she had passed through boiling sea five miles off the coast of St Lucia This of course was our safety valve, our own Soufrière never showed the slightest signs of activity

Great alarm was felt for the safety of H M S *Espoir* which had left Castries for St Pierre with the mails a couple of hours before the arrival of the *Roddam* There was no wireless in those days and it was therefore impossible to warn her of the danger into which she was running That night she arrived at St Pierre and the ship's company were sorely puzzled to discover no town no sign of life of any sort only a few smouldering fires

while there I knew a town existed After cruising amid floating [illegible] for an hour or so and blowing her whistle repeatedly the *Esk* proceeded to Dominica where she learnt the explanation of her strange experience

A year or two later the s s *Madiana* of the same Company as the *Roraima* was wrecked off the Bermudas By a strange coincidence *Madiana* is the Carib name for Martinique

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WILLIAM ANDERSON, 1748 1778, MASTER SURGEON ROYAL NAVY [1]

By Surgeon Lieutenant (now Surgeon Lieutenant Commander) I T Kervil M B R N

The true measure of William Anderson is realized when it is remembered that he lived only about thirty years and that all his contributions to knowledge were made in the last eight years of his life His achievements have not been adequately recognized

The gun room port closed H M Sloop *Resolution* continued her slow passage to the north after her first funeral at sea the purser made his laconic entry in the pay book Discharged Dead, and in the evening Captain Cook in the solitude of the Great Cabin wrote up his Journal ' Tuesday, the 11th of August, 1778 Soon after he had breathed his last land was seen to the Westward and to perpetuate the memory of the deceased for whom I had a very great regard I named it Anderson s Island (Appendix I)

William Anderson s brief career had ended But the young man who two years previously had stepped into Richmond Blanmire s shop at the corner of Craven Street Strand, and bought three notebooks had left nine hundred pages of manuscript [7] which apart from his other writings, were to make his name remembered In these vellum backed volumes he recorded with great care the daily progress of Cook s last voyage as it appeared to a man of wide learning and interests who was impelled by a consuming thirst for knowledge

William Anderson was born in Scotland about 1748 [20] the year James Lind retired from service afloat Of his early life nothing is known His youth covers a period of wars and upheavals by the time he was 8 years old the Seven Years War had broken out India was in a ferment and the news of the Black Hole atrocities had reached England The loss of Minorca the shooting of Admiral Byng and the successes of Boscawen followed Before the Peace of Paris the activities of the Navy were

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[1] First published in the *Annals of Medical History* vol x No 6 November 1936 and reprinted in this Journal by kind permission of the publisher Paul B Hoeber Inc New York

repeatedly before the public. When Anderson was [illegible] interest in travel and discovery had been stimulated by the return of Lieutenant James Cook from the first of his three great voyages. Meanwhile there had been an awakening interest in naval medicine. The disastrous inroads of scurvy during Lord Anson's voyage of 1740 had prompted Lind to write his famous Treatise in 1754, while his book on tropical medicine appeared in 1768. Stephen Hales had published his pioneer work on naval hygiene in 1743, 'Description of Ventilation,' which was followed in 1745 by Samuel Sutton's book on the same subject. Like other young Scottish doctors at that time Anderson may have become interested in travel by starting life as surgeon to the Greenland Fisheries Company or in some ship engaged in the slave trade. A knowledge he showed of the ancient Mexican language and of diseases in the West Indies supports the latter suggestion. His marked botanical inclinations suggest that he may at some time have been a student at the Botanic Gardens in Edinburgh. This is made the more probable by a note he made later when he named a new genus: 'I called it Ramsaia in honour of Dr Ramsay, Professor of Natural History in the University of Edinburgh.' [9] Unfortunately the records of the Royal College of Physicians and the Incorporation of Surgeons of Edinburgh, of the University and of the Faculty of Physicians and Surgeons of Glasgow, show no evidence of his medical studentship or apprenticeship. Similarly no information about him can be found in the defective nineteenth century transcript, 'The Surgeon's Servitude Record,' at the Public Record Office.[23]

William Anderson's name first appears in the public records in the Muster and Pay Books of H.M. Sloop *Resolution* as surgeon's first mate on December 3 1771. He entered by Warrant from the Navy Board. The ship in which Anderson began his naval career was a surveying sloop of 462 tons under the command of Lieutenant James Cook. James Patten was the surgeon. Of the remaining seven years of his life six were spent almost continuously afloat under conditions of great hardships and privation. This was the ship of which Lieutenant Charles Clerke wrote to Sir Joseph Banks [21] as "... by far the most unsafe ship I ever saw or heard of ... a ship which a pilot will not undertake to carry down the river ..." while Banks stated that she had a '... low and small cabin and was remarkably low between decks.' [21] The *Resolution* had as her consort on this voyage the *Adventure* a sloop of 336 tons Captain Tobias Furneaux, Surgeon Thomas Andrews. The *Resolution* sailed from Deptford on April 9, 1772, but contrary winds prevented her from leaving English shores until July 13. The voyage was undertaken for purposes of surveying and for collecting material of general scientific interest. Calling first at Ascension they sailed thence to the Cape of Good Hope. They next followed a route along the edge of the Antarctic ice creeping

through ice fields hidden by sleet or moving slowly with half frozen crews through fog banks till they reached latitude 71° South Water was scarce and the ships provisions were beginning to deteriorate After one hundred and seventeen days out of sight of land they reached New Zealand and in the following summer visited the Society and Friendly Islands A considerable outbreak of scurvy threatened but was averted There had already been twenty cases in the *Adventure* with one death, though there were none in the *Resolution* Cook had prevented any serious menace to his ship's company of 118 men by supplementing their food with cabbage, sweetwort, sauerkraut marmalade of carrot " which the surgeon found useful in several cases '[11], malt mustard and portable broth, as well as rob of lemons and oranges . a measure which was to bring him the Copley Medal of the Royal Society On his voyage of 1768 1771 in the *Endeavour* Cook had lost thirty men, including the surgeon Monkhouse, out of a ship's company of eighty-five these deaths are said however, to have been due chiefly to malaria contracted at Batavia [21] After his second voyage he was able to write [11]. The *Resolution* performed a voyage of three years and eighteen days, through all climates from 52° North to 71° South with the loss of one man only by disease, and who died of a complicated and lingering illness without any mixture of scurvy (Appendix 5) In the course of the next two years of surveying and collecting in Polynesia a second voyage to the Antarctic was made Then, having visited the Marquesas Now Hebrides New Caledonia, and Pitcairn Island the *Resolution* rounded the Horn and reached England on July 29 1775 [12] One of Anderson's shipmates on this voyage, Lieutenant Charles Clerke, was again associated with him , on Cook's next voyage he became Commanding Officer of H.M.S. *Discovery* which sailed as consort to the *Resolution* in 1776 Like Anderson he must have developed the seeds of tuberculosis during the voyage of 1772-1775 for when they next left England they were both sick men and Clerke died a year after Anderson at the age of 38 [18]

Another of Anderson's companions in the *Resolution* in 1772 was George Vancouver (1757 1798), rated as A B and aged 15 He was a midshipman under Captain Clerke in the *Discovery* Vancouver too was destined to develop phthisis after his great voyage of 1791-1795, and died of it at the age of 41 [15] Perhaps the most important association which Anderson formed during the voyage of 1772 1775 was that with the two enthusiastic naturalists Johann Reinhold Forster and his son Johann George Adam Forster the latter at that time little more than a boy They probably taught Anderson much during the three years and when he next went to sea he armed himself with their recently published ' Characteres Generum Plantarum " (fol 1775) describing the Australian flora There is however no reference to the surgeon's first mate in their

'Observations made during a Voyage [illegible] William Anderson landed once more at Woolwich he was 27 years old He had been round the world on a voyage which in length covered three [illegible] of its circumference James Cook had noticed his ability and be[illegible] which caused him to take Anderson with him as Surgeon of [illegible] on his next voyage and to refuse the services of a professional [illegible] Cook wrote [13] 'Mr Anderson, my Surgeon, who, to skill in his [illegible] ate profession added great proficiency in natural history was as willing as he was well qualified to describe everything in that branch of science which should occur worthy of notice' Anderson had already begun his studies in ethnography and geology, meteorology and anthropology Daniel Solander, the naturalist of Cook's first voyage wrote to Sir Joseph Banks after visiting the ships at Woolwich on August 13 1775 that Mr Anderson, one of the Surgeon's mates has made a good botanical collection [22] Anderson had also written 'Characteres breves Avium a description in Latin of birds seen during the voyage [2] Of the expedition Cook wrote [13] that Anderson had been of singular service by enabling me to enrich my relation of that voyage with various useful remarks on men and things, and he published with his account of it [12] vocabularies of the South Sea Islands supplied by the Surgeon's Mate

Anderson was paid off from the *Resolution* on August 25 1775 From October 11 1775, to December 9 1775, he served as Surgeon in H M S *Milford* [19] He joined the *Resolution* as Surgeon on February 15 1776 this was not the *Resolution* of the former voyage but a barque built at Whitby a year and a half previously [1] She was as unseaworthy, however, and Cook wrote that "If I return in the *Resolution* the next trip I may venture in a ship built of gingerbread [21] Cook had in the interval been promoted to Captain (1775) and the command of Greenwich Hospital where he would have had opportunities to obtain the services of other surgeons for his next expedition had he wished It was about this time that Gilbert Blane arrived in London to compete for a fashionable practice under the patronage of Lord Holdernesse That other great figure in naval medicine Thomas Trotter did not join the Service for another two years

Cook hoisted his pennant in the *Resolution* in the Thames on February 10, 1776 The *Resolution* and the *Discovery* commissioned at Deptford, the former with a complement of 112 men They were unusually happy ships Of the *Discovery* James King, who succeeded to the command on Clerke's death wrote It is doing bare justice to the seamen of this ship to declare, that they were the most obedient and the best disposed men I ever knew though almost all of them were very young and had never before served in a ship of war [18] In the *Resolution* there were many incidents which testify to the same spirit

Two Surgeon s Mates were appointed under Anderson The first mate who was later (1778) to succeed Surgeon John Law (Appendix 9) in the *Discovery* was David Samwell or Samuel (Appendix 8) His journal [20] has been of value in supplying some new facts about Anderson

The two ships left England on Cook s last voyage on July 12 1776 their purpose being to find whether the North-West Passage existed Their orders were to cruise first in the Southern Pacific to annex new discoveries, to plant the seeds with which they were supplied, and to distribute the animals they carried on board among the Islanders Trading relations were to be established The expedition was to include so much besides hydrography that Anderson had ample scope and considerable responsibility Events show that he justified Cook s choice, and contributed more than has been recognized to the value of the reports which were brought back to England Anderson was at this time in a precarious state of health [18] and was risking much in venturing on a voyage fraught with hardships in a vessel of 460 tons in which the food supply would be a matter of continual concern (Cook himself remarked later that what they ate was sometimes exceedingly nauseous) and in which he would pass through extreme climatic changes He had however few ties in England in his will [8] made during the voyage he only mentions an uncle William Melvill, living at North Berwick Mains Haddingtonshire and his sisters Betty and Rahmah

The account of this expedition was published in three volumes [13 18] six years after Cook s death The first two volumes are formed from his log books and journals, but very extensive use was made of Anderson s manuscripts which contributed entire chapters and all the details of matters other than hydrography In the Editorial Preface this is generously acknowledged as follows —

"This volume is enriched with considerable communications from Mr Anderson, Surgeon of the *Resolution* The confessed abilities and great assiduity of Mr Anderson in observing everything that related either to natural history, or to manners and language and the desire which, it is well known Captain Cook, on all occasions showed to have the assistance of that gentleman stamped a great value on his collections

His journal, by the order of Lord Sandwich was put into the hands of the Editors and the information made use of which it was found to contain, about matters imperfectly touched on or altogether omitted in Captain Cook s manuscripts Anderson left all his papers to Sir Joseph Banks [8] but his journals appear to have been impounded by the State and are now at the Public Record Office Great pains were taken in the production of these three volumes Banks played an active part and George III took a personal interest in the publication Cook in his journals was liberal in his praise of Anderson ' Mr Anderson, my Surgeon, who to skill in his

immediate profession added great proficiency in natural history [13] and similar entries are of frequent occurrence. When the surgeon died and he was left to pursue his observations on ethnography and philology alone he wrote with regret "After Mr Anderson's death we had few who took much pains about such matters [13]

The equipment which Anderson took with him for this expedition is only occasionally referred to in the published account but can be reconstructed from other books. He had reagents, a blowpipe and a microscope for examining geological specimens, spirits of wine and casks for preserving fish and other zoological material, and the somewhat inadequate supply of drugs allowed at that time—one man down with "fever" consumed the entire stock of Peruvian bark for the voyage, fortunately there were no other cases. In order to obtain his specimens from the natives the surgeon was allowed to draw on the ship's supply of trading articles, beads, hatchets, pieces of iron.

His library was chosen with great care. On April 23 1776, from the *Resolution* at Deptford, Anderson had written to Sir John Pringle who as President of the Royal Society, had asked him to describe an outbreak of fish poisoning met with in the *Resolution* off the Island of Malcolo in the South Seas July 23 to August 3 1774 [4]. Anderson was evidently in touch with this learned club of which Banks was such a brilliant member and subsequently President, but it was probably due to Solander's letter that Anderson came under the notice of this remarkable man. Banks's interest with Lord Sandwich was high, his overflowing purse and kindly patronage were extended to naval surgeons interested in natural history, his guidance and strong support made smooth the path of Surgeon Archibald Menzies when he came into conflict with his captain, Vancouver [15], his munificence made possible the publication of Surgeon William Houston's 'Reliquiæ Houstounæ' (London, 1781) notes on a herbarium of rare plants from Mexico and the West Indies, his generosity is shown in his correspondence with the unhappy and indigent William W. Ellis Assistant Surgeon on Cook's last voyage and author and illustrator of a well written account of the expedition, which was the first to be published [21]. Anderson's connection with Banks is shown by a letter written by him to his patron from the Cape of Good Hope, on November 24, 1776 a transcript of which is preserved in the library of the Botanic Gardens at Kew, and in his will "I leave to Joseph Banks Esquire the Natural Curiosities I have collected during this voyage with some Manuscript Notes relating to them" [8]. He was probably one of the naturalists made welcome to the library and collections at 32, Soho Square where Banks extended hospitality to scientists of all nations. In his paper on South Sea fishes Anderson states that he was able to identify them through Banks's drawings. He was moving in this circle just before he

left England in 1776, a factor which may have influenced his choice of books to take to sea with him. Among others there were three volumes of Dampier's Voyages,' and Hawkesworth's account of Cook's first voyage, giving details of the Australian native races, ethnography and languages, Pennetty's Voyage a la Nouvelle Guinée, Hasselquist's Iter Palestinum on fishes, Thomas Pennant's Synopsis of Quadrupeds' (1771), Sydney Parkinson's 'A Journal of a Voyage to the South Seas in H.M.S. *Endeavour*' on plants, and the volumes of the 'Natural System of Linnæus'. All these books passed to David Samwell on Anderson's death [20].

Throughout the voyage Anderson was continuously occupied. At sea he wrote up his voluminous notes; in harbour he was the companion of Cook on expeditions ashore or took solitary walks in pursuit of matters of interest for his projected book on the work of the expedition [7]. Anderson's intention of writing for publication is unfortunate in that it made him write from a curiously impersonal point of view. His writings supply no indication of his character, but his varied talents can best be appreciated by following the account of the voyage as told in his journals and in the official publication, and by passing in review such other of his manuscripts as have survived. In addition to his three-volume journal he was keeping a volume of notes and a catalogue of the collections he was forming. This was classified in botanical and zoological sections under the titles 'Genera Nova Plantarum, together with Zoologia nova seu Characteres and Historia Animalium' [3, 6]. Minute details are given throughout in both Latin and English of the new species he met with, and it testifies to his sound knowledge that what he described as new was subsequently confirmed as such. Dr John Latham, the distinguished nineteenth century physician and botanist, made use of some of Anderson's descriptions when drawing up his great Catalogue of Species. Anderson's notebook, which has never been published, was divided up into its component parts in 1898, these are in the appropriate departments of the British Museum of Natural History. The specimens of which these books were but the index must have occupied long hours of examination and preparation.

Anderson's death and the subsequent events of the voyage made their dispersal almost inevitable. Some are said to have been left in Russia in the winter of 1779 as security for supplies received by the ships and never redeemed. These may be in Moscow but some were brought home and were sent to the collections of Sir Joseph Banks and Sir Ashton Lever, the latter of whom had a large museum in Leicester Square. At the dispersal of the Leverian Museum some of the contents were purchased by William Bullock, to whom apparently Banks also gave part of his collections, and exhibited by him at the Egyptian Hall, Piccadilly. This museum was sold in 1819. Most of the specimens left the country and

some may survive in foreign collections, more especially that in Vienna. Some of Anderson's plants, his 'hortus siccus', were incorporated in the Banks Herbarium and appear there at the British Museum of Natural History, mounted on the same whitish brown paper as the remainder of the collection, but with Anderson's labels in some cases. Banks's library and collections were transferred to the British Museum in 1827. There is also a specimen of William Anderson's in Robert Brown's herbarium, acquired by the British Museum of Natural History in 1876. Anderson's herbarium or what was left of it, when examined by Sir Joseph Hooker in 1843, was found to have been much injured by insects, many specimens being destroyed [9]. His manuscripts have suffered a similar fate and some of the most valuable ones have disappeared. When in 1779, after three years of voyaging and two winters in the ice, the *Resolution* and *Discovery*, lying in the harbour of St. Peter and St. Paul in Kamchatka, were found to have become so leaky that fears were entertained for the safe return of the expedition, it was decided to dispatch the most valuable records of the voyage home to England and Cook's papers with those of Anderson were sent under convoy of the Governor of Kamchatka to the British Ambassador at the court of the Empress Catherine. From St. Petersburg they were eventually forwarded to the Admiralty. The news of Cook's and Anderson's death was then made public for the first time. These vicissitudes together with the passage of a hundred and fifty years have left little biographical material in the case of the latter. Had Cook lived more might have been known.

On the way to the Cape of Good Hope the ships called at Santa Cruz, Teneriffe, for three days. Anderson spent much of the time ashore and his notes supplied a chapter [13] on the state of the island, its scenery, geological formation, natural history, town planning, architecture, folklore, employments and labour conditions, products and trade, and what could then be learnt of its primitive inhabitants, the Guanches, who were almost extinct. The climate appealed to him as suitable for consumptives he may have recognized in himself the beginning of his fatal illness. On August 4 they left Teneriffe. Six days later the *Resolution* was very nearly wrecked, according to Anderson [7], who severely criticized Cook for "hazarding" his ship. This asperity may have been the outcome of his illness or of the conditions under which he was living on board. As the ships sailed south the timbers shrank and they became very leaky, the surgeon and other gun-room officers were all driven out of their cabins by the water which poured in through the sides. The gun room with its single port was dark and damp and the cock-pit provided little comfort.

By October 18 they were at Cape Town and during the following month, while the ships were being recaulked, Anderson was able to make an expedition up country. This he did at the request of Francis Masson

(1741-1805), a fellow Scot, who had been sent to South Africa from the Royal Gardens at Kew to collect plants. Masson arranged for him to visit the tract of country known as the Pearl, where there is a great granite rock rising high and bare from the hills, the Pearl Diamond. Anderson made a careful survey of this geological curiosity, and on November 24, 1776 wrote a report [5] which with specimens he sent to Sir John Pringle. Like his communication on poisonous fishes this was read before the Royal Society. It is noteworthy that whatever he investigated, whether the 'saxa conglutinata' of the Pearl Diamond, or the 'sparus pagrus' which poisoned the ship's company of the *Resolution* in 1774 or the birds and plants in which he was more immediately interested, Anderson was able to recognize and name them or to declare them correctly as new discoveries.

At the Cape he was joined by David Nelson, the gardener, who was appointed to the *Discovery* together they made expeditions to collect plants and seeds for Sir Joseph Banks. Among Anderson's shipmates in the gun room of the *Resolution* Nelson met the young sailing master, William Bligh. The future admiral of the blue was then aged 22. Both men were together again during the mutiny in the *Bounty*, when Nelson died from exposure and exhaustion during the famous three thousand mile journey in an open boat. Before they left Cape Town on November 30 Anderson had noted in his journal the nature of the country, the villages, water supply, agriculture, and climate.

The ships next made for Kerguelen's Land, and the harbour in which they anchored on December 25 still appears on the charts as Christmas Harbour. Anderson was especially interested in the cabbage plants growing there which he named Pringlea after the aged pioneer in military hygiene. 'To Anderson we owe all that was known of the flora of Kerguelen's Land, prior to the Antarctic Expedition of 1840' [9]. Hooker rediscovered Pringlea and gave it the specific name 'antiscorbutica' [16]. Anderson himself is commemorated in the genus Andersonia, so named by Robert Brown [10], the associate of Banks and father of the Linnean Society. Anderson's interest was not only academic; he was anxious to find plants which might be of value in preventing scurvy, and grasses which would be serviceable as forage for the sheep, horses and cattle which the expedition was taking to the South Sea Islands. It was he who decided from the leaves of which trees the 'spruce' beer should be brewed, a decoction much valued by Cook as an antiscorbutic.

On January 26, 1777 the ships anchored in Adventure Bay, Van Diemen's Land remaining there till the 30th —

'Mr Anderson, my Surgeon with his usual diligence spent the few days in examining the country. His account of its natural productions, with which he favoured me, will more than compensate for my

silence about them. [illegible] of his remarks on the inhabitants will supply what I may have omitted or represented imperfectly" [13]

By the middle of February they were in Queen Charlotte's Sound, New Zealand the site of a tragedy during the previous voyage, when a boat's crew from the *Adventure* fell victims to the cannibals. At this time there were only two men on the sick list of the *Resolution*. This is one of the few medical notes that remain of all Anderson's industrious records. The sick books are lost but from the careful histories with daily notes, which he quotes in his paper on fish poisoning we know that his clinical interests did not lag behind those of the naturalist. During the twelve days they remained in the Sound Anderson investigated the character of the country and its climate, making meteorological observations. In addition to examining the fauna and flora he supplemented the then scanty knowledge of the customs and appearances of the Maori race observing their dress and ornaments, their houses food cookery weapons boat building and other arts. He collected a small vocabulary of their language.

Throughout March and April the ships sailed northward, stopping at various small islands of the Friendly group. Anderson's spelling of their names was adopted on the chart of these and of the Society and Sandwich Islands which was later engraved. His authority was also accepted for all the names in the published report covering this period of the voyage. He completed what is practically a small dictionary of the Friendly Islands language nearly 650 words of which were printed as an appendix to the report [18]. It is this collection to which Anderson probably refers when he writes in his journal for 1777 [7] of a manuscript book which he had in his cabin. Vocabularies of the Indian Languages amongst the Islands of the South Seas. He refers also to his manuscript of "The General History of a Voyage made in the Resolution in the years 1772, 1773 1774 and 1775". This has been lost and cannot have been used in Cook's own account [12] which was being published in London that year.

In June they went to Tonga. Here as elsewhere in these South Sea islands he went ashore with Cook and attended the ceremonies arranged in the Captain's honour. In the evenings there was generally an entertainment with boxing wrestling and native dances. Anderson accepted the charm of the islanders' music but while he listened to the "inexorable and unfaltering delirium of the drums" he remained a detached spectator noting with scientific and dispassionate interest the pattern of the dances. Their description has been preserved chiefly in the surgeon's words. "The skill of that gentleman in directing his enquiries will in some measure supply the imperfection of my former account of this island [13]. Anderson accompanied Cook on his diplomatic missions to native chiefs, partly in the capacity of interpreter partly to obtain information. There were found to be over a hundred and fifty islands in the archipelago. Mr Anderson

with his usual diligence procured all their names "[13] His remarks on the natives their diseases cleanliness clothes, practice of tattooing, &c, occupy much of two chapters of Cook's account In July 1777, they left the Friendly Islands and went to the Society Islands, where his knowledge of the language from his previous studies again proved most useful Samwell says of him [20] Having taken some pains to learn the Otaheite language he was better acquainted with it than anyone in the two ships," and adds, 'he was the only Person amongst us who could pretend to any degree of knowledge in Botany In September, 1777 he had the unusual experience of attending a human sacrifice with Captain Cook and the artist, Webber—fortunately the victim was already dead (Appendix 7) He was interested in their religious beliefs and his curiosity as usual led him to investigate every detail, he noted among other matter the remarkably good method the islanders then had of embalming corpses By the autumn the ships were overrun by rats, and plagued with black beetles —

'We carried ashore the bread remaining in the bread room to clear it of vermin The number of cock-roaches that infested the ship, at this time is incredible if food of any kind was exposed only for a few minutes it was covered with them and they soon pierced it full of holes, resembling a honey-comb according to Mr Anderson's observations, they were of two sorts the 'blatta orientalis and germanica

The black beetles lay concealed in the rigging so that when a sail was loosened thousands of them fell upon the decks At night also they appeared and made everything in the cabins seem as if in motion [13] But Anderson never interrupted the course of his researches and writing whatever the conditions he worked under might be His observations at Otaheite form a chapter in the second volume of the Voyage He investigated the local surgery and physic, the effects of drinking "Ava the diseases and domestic hygiene of these people, as well as their history, folk-lore and government His serious manner of cross questioning the natives was such as to fill the more timid with a sense of guilt and precipitate a retreat [18]

On December 8 1777 the *Resolution* and *Discovery* left the Society Islands and all their prodigal luxuriance for the long voyage to Alaska in search of the North-West Passage Anderson had spent his leisure in preparing and classifying his dried birds and small animals attaching their Latin names to each, but the black-beetles were attracted by the ink on his labels, and finally they attacked his specimens as well There is little reference to ship's duties at this time, but from his journal he appears to have supervised the standing health orders which Cook had established from the outset (Appendix 5) These follow the lines suggested by Stephen Hales thirty years previously, and the continued good health of the ship's companies is a tribute to the wisdom of this early authority on naval

hygiene On their way north the ships discovered the Sandwich Islands and Anderson collected yet another considerable vocabulary It was largely through this that they were able to investigate the character of the islanders and to barter with them

They approached the west coast of North America in March and met with hail and sleet and thick, hazy weather, or gales of wind and rain the thermometer had fallen 30° since they left Otaheite, the ships were once more very leaky and the food supplies inadequate The surgeon must have realized that his hopes of returning to Scotland were rapidly diminishing Nevertheless at Nootka Sound (Vancouver) he was much interested in the Indians and here and at King George's Sound managed to collect another vocabulary of 250 words In these matters Cook wrote that he 'owed everything to him [13] Throughout the greater part of June the weather was raw and cold with mist and drizzling rain Working by the light of lamps fed with seals blubber Anderson had added each evening to his pages of manuscript, but by June 3 he was either too ill or too despondent to continue the records he had kept with such care [7] He lay in his cabin tended by Joseph Collett and William Starling the gun room servants The *Resolution* continued to creep northward through the fog banks which often made it impossible to see the length of the ship On July 21 1778, realizing he was without any prospect of Recovery [8] he made his will Some days before they saw the blink of ice on the northern horizon the end came On the afternoon of an overcast day, the ship sailing gently in a moderate breeze Anderson died Somewhere off the west coast of Alaska, about latitude 62° N longitude 192° E they 'committed the Body of the Deceased to the Deep Sounded 12 fathm (Ad 51/4560) Cook wrote in his journal

'Mr Anderson, my Surgeon who had been lingering under a consumption for more than twelve months expired between three and four this afternoon He was a sensible young man, an agreeable companion, well skilled in his own profession and he had acquired a considerable knowledge in other branches of science had it pleased God to have spared his life the Public I make no doubt, might have received from him such communications on various parts of the natural history of the various places we visited, as would have abundantly shewn that he was not unworthy of this commendation [13]

This was high praise from Cook who nowhere else during this voyage singled out any individual for especial notice Isamwell in his journal that day after paying a tribute to Anderson wrote Being withal a sensible and modest Young Man his Death was much regretted

The compilation of this biography would have been impossible without the kind assistance and advice of Mr T H Graham Librarian of the Royal College of Physicians of Edinburgh Mr N B Kinnear, British

Museum of Natural History Mr H E Smith [illegible] Librarian Dr Ralph Stockman and Mr D Thomson of the Royal College of Surgeons of Edinburgh to all of whom my thanks are due

REFERENCES

[1] Additional MS 37528 British Museum

[2] Anderson W Characteres breves Avium in itinere nostro adhuc nunquam [illegible] 4to MS Note book in Library Dept of Ornithology British Museum of Natural History

[3] [illegible] Zoologiæ novæ seu Characteres and Historia Animalium Latin and English MS Note book bound with (2) pp 13

[4] Idem An Account of Some Poisonous Fish in the South Seas In a letter to Sir John Pringle Bart P R S from Mr William Anderson late Surgeon's Mate on board His Majesty's Ship the *Resolution* now Surgeon of that Ship *Phil Trans Roy Soc* 66 p 544 *et seq* 1776

[5] Idem An Account of a Large Stone near Cape Town in a Letter from Mr Anderson to Sir John Pringle Bart F R S *Ibid* 68 102 106 1778

[6] Idem General Nova Plantarium 1776 1777 with Descriptiones seu Characteres Specificos Latin and English 4to MS Note book pp 40 Dept of Botany British Museum of Natural History

[7] [illegible] Journal of a Voyage made in His Majesty's Sloop *Resolution* May 16 1776 to April 1 1778 MS 4to pp 300 Public Record Office Ad 51/4560 303 A Second Volume with entries from April 14 1777 to September 3 1777 MS 4to pp 300 Public Record Office Ad 51/4560 304 The Third Volume referred to in the Text is lost (Entries from September 3 1777 to June 3 1779)

[8] [illegible] Will 1778 Recorded at Somerset House 1780 P C C Collins 503

[9] [illegible] J William Anderson and the Plants of Cook's Third Voyage *Journ Botany* London 54 345 1916 55 81 1917

[10] [illegible] R Pendulous Flore Novæ Hollandiæ 55?

[11] Cook J The Method taken for Preserving the Health of the Crew of His Majesty's Ship the *Resolution* in the late Voyage round the World Addressed to Sir John Pringle Bart P R S from Mile End March 5 1776 and read before the Royal Society 8 March 40 1776 *Phil Trans Roy Soc* 66 402-406 1776

[12] [illegible] A Voyage towards the South Pole and round the World performed in His Majesty's Sloops the *Resolution* and *Adventure* In the years 1772 1773 1774 and 1775 London 2 vols and n

[13] [illegible] A Voyage to the Pacific Ocean London 1785 vols and pl

[14] [illegible] Plants I L C P D on Flora on Sir Joseph Banks quoted in (21) p 49

[15] [illegible] Vancouver's Life London 1930

[16] [illegible] J [illegible] Flora Antarctica Vol n quoted in (9)

[17] [illegible] H H William Anderson Dict Nat Biog London 1885 I 398

[18] [illegible] J A A Voyage to the Pacific Ocean London 1784 *see* 1d) vol n

[19] [illegible] Day Books of H M Ships at Public Record Office

[20] [illegible] Some Account of a Voyage to the South Seas in 1776 1777 1778 written by David Samwell Surgeon of the *Discovery* entries from February 10 1776 to November 29 1779 MS 4to British Museum Egerton MSS 2091

[21] [illegible] F Life of Sir Joseph Banks London 1911

[22] [illegible] D Letter to Sir Joseph Banks Transcripts of Banksian Correspondence British Museum of Natural History vol 1

[23] [illegible] Surveyor's Survitude Record Public Record Office Ter 9928

APPENDIX

1 Anderson's Island does not exist Cook was mistaken in his hydrography and both the island previously named after Captain Charles Clerke and Anderson's Island now appear in the Admiralty charts (Bering Sea and Strait Pilot Ed 1 London, 1920 Hydrographic Department of the Admiralty) as the middle and

eastern ports of the earlier discovered St Lawrence Island to latitude 63° N between Alaska and the coast of Kamchatka Anderson however needs no monument other than Cook's words, which shew him to have a prior claim to Sir John Richardson to be known as "The Naturalist of the Naval Medical Service"

2 The following letter (J M Matra to Sir Joseph Banks May 7 1790 Addl MSS 33979/29) requires some comment Just after the news of the mutiny in the *Bounty*, April 28, 1789, reached England, he wrote, "Something what Bligh's people did was designed by most of the people of the *Endeavour* headed by Anderson and Gray, I think" The reference is to a proposed mutiny when the *Resolution* was at Otaheite in the voyage of 1772 1775 in which Matra admits he was himself a ringleader The letter was written seventeen years later the wrong name of the ship is given the *Endeavour* being Cook's ship in the voyage of 1769, and the reference is undoubtedly to Robert Anderson gunner and James Gray boatswain Cook himself can have thought little of it for Robert Anderson was again gunner of the *Resolution* on the last voyage of 1776 1780 Attention is drawn to this letter because in the "Life of Sir Joseph Banks" (2) the reference is made that the Anderson referred to is the surgeon

3 William Anderson, Surgeon, has been confused in Watt's Bibliotheca Britannica, Vol 1 p 30 with William Anderson M D, a Fellow of the Royal College of Surgeons of Edinburgh in December, 1775, who resided in that city until 1786, serving as a member of the Deacons Council and the Library Committee of the College during the period 1774 1786 The confusion probably arose through this William Anderson having also travelled and having written a paper on the "Use of the Cabbage tree bark as an Anthelmintic" in which it is stated that he "practised medicine for some years in the West Indies" (Medical and Philosophical Commentaries, by a Society in Edinburgh, Vol iv, Part I Ed 2 London, 1790 p 84)

4 According to the manuscript copies of Cook's Journals of the *Resolution* of which there are two volumes covering August, 1778 the date of Anderson's death is given as August 3, 1778 (Egerton MSS 2177A Brit Mus and Ad 55/113 P R O) In the Log Books, however the date is given as the fourth and those as daily records with definite spacing are more likely to be accurate (Ad 55/112 Ad 55/114, Ad 51/4560 P R O) The date August 3, has nevertheless been accepted in the published account of the voyage and in the Dictionary of National Biography

5 Cook placed hygiene before antiscorbutics and attended particularly to personal cleanliness, dry clothes and a dry ship [11] "Once or twice a week she was aired with fires and when this could not be done she was smoked with gunpowder moistened with vinegar or water I had also a fire made frequently in an iron pot at the bottom of the well, which greatly purified the air in the lower parts of the ship Of the rob of lemons and oranges he wrote on July 7, 1776, to Sir John Pringle, "I have no great opinion of these alone"

6 Will of William Anderson P C C Collins 502 In the name of God Amen I Wm Anderson Surgeon of his Majesty's Sloop *Resolution* having been for some time in a bad State of Health and now without any prospect of Recovery have resolved to make my last Will and Testament thereby annulling every other will or Testament made by me heretofore and to the following manner after all my just and lawful debts are paid I leave or bequeath unto my Uncle Mr William Melvill living or lately living at North Berwick Mouns Haddingtonshire Scotland one half of whatever I may be possessed of at my death whether Money Goods &c I leave to my sisters Betty and Rebinah the other half of whatever I may be possessed of at my death to be equally divided between them I leave to Joseph Banks Esquire the Natural Curiosities I have collected during this voyage with some Manuscript Note relating to them I leave to Mr Samuel of the *Resolution* what Books I have on Board except Manuscripts I leave what clothes or Wearing apparel

I have to Joseph Collett and William Starling the Gne Room Servants and desire that this and the preceding article may be fulfilled at my death without waiting the Execution of the rest of the Will and I hereby nominate and appoint Messrs Thomas and William Maude in Downing Street Westminster Executors of this my last will In Witness whereof I have hereunto set my hand and Seal the twenty first day of July in the Year of our Lord one thousand Seven hundred and Seventy eight Wm Anderson Signed sealed published and declared by the Testator in the presence of James King A Dewar

This will was proved at London the fourteenth day of November in the year of our Lord one thousand Seven hundred and Eighty , by the oath of Thomas Maude one of the Executors named in the will to whom administration was granted of all the Goods Chattels and Credits of the deceased first sworn duly to administer power reserved of making the like grant to William Maude the other Executor named in the will when he shall apply for the same

The balance of Anderson s pay was handed over to Γ Maude a Navy Agent and Adam Jellicoe Paymaster of the Navy 29th December 1780

7 The Human Sacrifice According to Cook s account [13] he visited this with Anderson and the artist Webber The latter made a drawing of the scene, which was published at the same time as the account of the voyage but in a separate volume of plates Webber has shown three Europeans on the right of the sacred enclosure The one facing the artist is Cook, the one with his back to him is perhaps intended for Anderson while the third figure in profile is certainly the Surgeon s Mate David Samwell His characteristic features are unmistakable and can be compared with the silhouette at the British Museum and the engraving from a portrait painted in Paris in 1786 (Egerton MS8 2591)

8 David Samwell This is the name which he appears under in the Surgeons Servitude Record [23] and which he uses in his journal, but Cook and Anderson both call him Samuel His naval career is given in full in the record named above and covers the period 1776 to 1796 Part of his journal was published as " A Narrative of the Death of Captain James Cook to which are added some particulars concerning his Life and Character and Observations respecting the introduction of the Venereal Disease into the Sandwich Islands 4to London 1786 (MS Egerton 2591)

9 John Law He was transferred to the *Resolution* from the *Discovery* on William Anderson s death His journal from 1778 to 1779 is preserved in the British Museum manuscript collection (Add MS8 37327) It is a scanty and ill kept fragment of a diary

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THE EARLY HISTORY OF PLYMOUTH HOSPITAL

Obtained from Admiralty Records, Documents and Local Records

Communicated by Captain A HURFORD M B E R M (Retd)

(*Continued from p* 47)

The hospital grounds are surrounded by very high thick walls which extend from the entrance gates in Clarence Place up Elliot Hill and down to Millbridge These walls were apparently built to check the too frequent desertions which took place from the hospital

The walls of the hospital buildings are of great thickness and the foundations very deep There is no damp-proof course in the old walls, such

as are put into all modern buildings it had not been introduced when Plymouth Hospital was erected

Official Residences

The original residences facing the hospital were built at the same time as the hospital was, in 1765 They are of red brick but in 1921 these were cemented over as the old bricks were absorbing moisture to such an extent that the houses were becoming very damp inside The houses built in 1806 are of stone In addition there are ten other houses in different situations at the west end of the hospital, making twenty in all

These residences are occupied as follows —

No 1 and 2	Medical Officers Mess	No 11	Foreman of Labourers
3	Surgeon Commander (S)	12	Superintending Pharmacist
4	Surgeon Captain (M)	13	Bailer
5	Sisters' Quarters	14	Store Matron
6	Paymaster Captain	15	Commissioned Warâmaster
7	Surgeon Captain (S)	16	Senior Pharmacist
8	Medical Officer in Charge	17	Electrician
9	Surgeon Commander (M)	18	Police Sergeant
10	Chaplain	19	Foreman of Baggage Store
		20	Foreman of Stores

Residences Nos 4 5, 6 and 7 had stables and coach houses attached but these are now used as garages

Hospital Blocks

The Blocks, ten in number (excluding the Central or Administrative Block), are built in stone and were originally known by numbers The Wards (six in each block) were also numbered up to 60 In 1900 to 1906 Blocks 1 to 9 were reconstructed and sanitary annexes built The dividing wall between the two wards on each floor was taken down each block now consists of three large wards The numbering of the blocks and wards remained unaltered until 1924 when Surgeon Rear Admiral A Gaskell the Medical Officer-in-Charge, had the blocks lettered from 'A' to 'J' and the wards numbered 1, 2 and 3 in each block Thus we have now A1 2, and 3, B1, 2 and 3, and so on certainly, this is a far better arrangement than the old one In addition each block has a name on its portal The Central Block is called "Trafalgar, the other blocks as follows —

A — 'Dominica ' B — 'Ushant —, C Algiers , 'D ' La Hogue ', "E ' Johannesburg F — Nile — G, ' — St Vincent — H — ' Gibraltar , "I Basque Roads ' J, "San Domingo '

Although the blocks and pavilions still remain the uses to which some of them are now put differ largely from those described by Governor Creyke in his inspection of the hospital

Trafalgar Block, originally accommodating the dispensary, quarters for the dispenser and for the matron, and the Chapel, is now used by the *x* ray

and laboratory departments and [illegible] the administrative offices of the Medical Officers in charge of [illegible]

A Pavilion formerly the hospital [illegible] is now used for the baggage of patients

B Pavilion is the operating theatre.

C Pavilion originally the cook house contains cubicles for Sick Berth Chief Petty Officers, and also baths for the use of Sick Berth Staff

D Pavilion still remains as the provision room but in addition has a canteen for patients and staff

Needless to say the cellars under H Block are no longer used for the reception of slight or other type of cases

The actual area of ground on which the hospital and buildings stand, is 24 acres, 3 roods, 3 poles

At the North Boundary is a creek by which until comparatively recent years, patients were conveyed to the hospital by ships boats. Boats can only come alongside at certain states of the tide, and coxswains had to be very careful to follow the marked channel owing to the shallowness of the water In days gone by it was nothing unusual to find a boat 'on the mud' and having to wait for the next tide before getting off

With the tide out, the creek is nothing but a huge mud flat A good deal has been done in recent years to reclaim this eyesore, but that part adjacent to the hospital still remains ugly and offensive

On the opposite bank is the Military Hospital now closed as such It has recently been purchased by the City Authorities and will shortly be converted into a school

With the advent of motor transport the necessity of using the old jetty as a landing place for patients ceased and they are now conveyed by ambulance to the main gate where the Receiving Room is now situated The old baggage store which was immediately adjacent to the jetty has been moved to a more convenient part of the hospital

This account of Plymouth Hospital in its early days is somewhat bare but it is the best that can be done from the material available

It does show that the original building was of a very substantial type, and even now after a life of 172 years its main features still retain their original design, although many alterations have been effected at various times

The granite columns supporting the verandahs around the quadrangle although weather worn are still symmetrical, and give evidence of that craftmanship which existed before the era of machinery

The fine carving on the pillars supporting the main gates remains in excellent condition

The original accommodation was for 1 250 patients The number of patients which can now be received is about 700 and this number is based on 1 200 cubic ft per bed in the general wards

The subsoil is shillett and slate rock at varying depths, mostly close to the surface

Plymouth Hospital suffers from a poor situation. On its north and west sides it is mud flat and on the southern and western sides the ground is low-lying and rather drab, overpopulated, and of the slum type.

Hospital Instructions

Going back to our early days again, we find that it was necessary to issue regulations for the guidance of those in charge of Naval Hospitals, and one of the first, if not the first volume was issued in 1808. It is entitled "Instructions for the Royal Naval Hospitals at Haslar and Plymouth as proposed by the Commissioners appointed for revising the Civil affairs of His Majesty's Navy, and established by His Majesty's Order in Council."

It is rather bulky, measuring 10½ in. by 8½ in. by 1 in., and was printed by the Philanthropic Society, St. George's Fields. The type and paper are excellent.

The book laid down very definitely the duties of the Governor, Lieutenants, Physicians, Surgeons, Agents, Stewards, Dispensers, Chaplains, Store Matrons, Ward Matrons, Porters and Overseers of Labourers—219 pages in all. It also contained an Appendix.

Those who are apt to grumble to-day at the number of forms in use, will be interested to learn that contained in this Appendix are specimens of ninety-four forms which were used in the various activities of the hospital.

It is very interesting to read these old instructions. They are well compiled and seem to cover all the ground required. Space does not allow of copious extracts, but I propose picking out items of interest concerning the officers &c., to whom the instructions applied.

Governor.—Resided in the hospital. He wore the uniform of his rank in the Royal Navy and had full authority over all officers and other persons employed in the establishment. The general instructions for this officer are very similar to those now in use such as—Order Book to be established. Official Orders to be preserved, public letters to be entered and indexed, correspondence and accounts to pass through his office. Standing Orders were to be issued as required. The hospital had a Marine Guard under a Subaltern, and sentinels were placed round the hospital in such situations as the Governor thought necessary, as a precaution against patients deserting.

He was empowered to punish such of the patients whose misconduct deserved it by confining them to the wards, by solitary confinement, or by compelling them to wear yellow jackets, with the crime if of a serious nature, marked on the back. Such punishments depended on the medical officer under whose care the patient was certifying that he was fit to undergo this. Patients for survey were dealt with as follows. The physician and surgeon reported to the Governor every Monday morning, the names and diseases of such men under their care who were considered

[illegible] and when [illegible] this number amounted to ten, or [illegible] provided there [illegible] among them consumptive cases the Commissioners Officer of the Port was requested to send such officers as [illegible] that purpose to survey the cases

The surveying officers were assisted by the Governor and the physicians and surgeons of the hospital

Whenever officers were surveyed they were examined in the presence of the Governor

As at the present time the invaliding of officers and men was reported to the Port Admiral, and no one was discharged until his approval had been obtained

The general injunction for the proper performance of the Governor's duty was as follows "It is expected that you feel an interest in the whole management of the important charge committed to your care, that you pay particular attention to everything going on in the hospital, and to all the concerns thereof, causing the best economy to be observed on all occasions, and being very watchful to prevent by every means in your power, any neglect of duty or the smallest abuse in any branch of the establishment."

LIEUTENANTS.—These officers were appointed to assist the Governor in administration They resided in the hospital and could be granted occasional leave of absence not exceeding four days This period of leave applied generally to the officers of the establishment any longer period having to be approved by the Commissioners for executing the office of the Lord High Admiral of the United Kingdoms of Great Britain and Ireland, &c The senior of these Lieutenants acted for the Governor in his absence

The Lieutenant on duty attended at the reception of patients and was responsible for seeing them properly attended to, and their clothes, &c., mustered and compared with the inventory on the back of the sick ticket He also directed patients to lodge money and valuable effects with the agent

A Lieutenant visited every part of the hospital at least once in the forenoon of every day for the purpose of seeing that the wards bed linen and persons of the patients were clean and that all regulations were assiduously observed He also had to take every precaution when wine or porter was prescribed, to prevent any man from drinking the allowance of another

At night the officer mustered the patients in the wards, secured the external doors and walked all round the boundary walls to inspect every place in which men might be concealed with a view to making their escape at night.

On the discharge of patients the duty officer conducted them to the boats and gave every assistance to prevent desertion or intoxication He mustered the artificers and labourers, on their coming to and leaving off

work attended the receipt of provisions and stores weighing out and dressing of same

Apparently these officers were responsible for all the activities of the hospital apart from those performed by the medical officers and the keeping of accounts The acceptance of any fee, gratuity or reward whatever for the nomination or appointment of any clerk, or other person, to be employed in any capacity in the hospital, was strictly forbidden To this effect they were required to take an oath in the prescribed form and to give bond in three times the amount of their salary, and in case of default therein they were liable to dismissal from the office held and declared incapable of serving His Majesty in any civil capacity whatever

PHYSICIANS AND SURGEONS —The instructions for these officers cover sixty-two pages of our book and refer to the Transport Service for taking care of sick and wounded seamen and for the care and custody of prisoners of war

Physicians and surgeons were directed to obey the orders of the Governor and Lieutenants on all occasions excepting in cases that were purely medical

A physician and surgeon attended at the reception of all patients unless they arrived at a time when medical officers were doing a ward visit, in which case a hospital mate was allowed to perform this duty No reference as to what actually constituted a hospital mate can be found Patients were not to be received who could be obviously and speedily cured by the ship's surgeon Feigning diseases or hurts appeared to be a common practice as special instructions were issued to deal with such cases

Tickets were sent with patients corresponding, one can suppose with the sick vouchers of to day Ship's tickets were signed by the Captain and other signing officers Marines from Headquarters presented a ticket signed by the Commandant and Surgeon of Marines, and it was the duty of the receiving medical officer to sign his name on the back of the tickets as authority to the agent for entering the patients on the Hospital Muster Book

As at the present time hospital employees or servants as they were called in the period under review were received and treated in hospital

Medical officers receiving patients were responsible that they were washed in a bathing tub with warm water and soap before being put to bed or where this was deemed improper he was gently washed by a nurse with a cloth dipped in warm water with soap under the superintendence of a hospital mate who stood by to administer any relief that the patient might happen to require

Special precautions had to be observed when patients were admitted with contagious diseases, and there were established regulations for purifying clothing bedding &c

Patients suffering from infectious diseases were furnished with the dress of the hospital but it would appear that all other patients took their own clothing into the wards for use

[illegible] limited on account of insanity had to remain two weeks and [illegible] to Bethlem Hospital

The hours prescribed for visiting patients daily were at or before 9 30 a m in summer, and at or before 10 a m in winter The evening visit was at the same time as now 6 p m

Patients becoming worse or dangerously ill were to be visited by the hospital mate, and the medical officer kept informed of the patient's progress

The airing of bedding and ventilation of wards appears to have been carefully attended to, but it is interesting to note that when bedding was placed in the open for this purpose a sentinel was posted to prevent articles being lost

A distance of 4 feet was preserved between each bed, or cradles as they were called, and the number of nurses was in the proportion of 1 to 7 patients.

Consultations were held in all critical cases, or in such as demanded a capital operation, and treatment was decided by the majority present but if the numbers were equal, then the surgeon under whose care the patient was had the casting vote So second opinions were even sought in 1808

The Commissioners required a weekly statement of those patients for whom it was found necessary to prescribe more than a pint of wine, or a quart of porter daily

Physicians were instructed to extend the practice of vaccine inoculation throughout His Majesty's Navy, and should any persons demur against such inoculation the medical officer was with a view to overcoming their prejudices, to represent the harmless nature of the operation and the subsequent advantages thereof

No medical officer of H M Service was to accept fees or indulge in private practice

It really is very extraordinary how many of these old instructions still exist to-day although in most cases the wording is different Even forms can be identified with those in present day use On going through our old book and reading the instructions very carefully, it must be admitted that if these regulations were observed everything possible was done for the welfare of the patients and their interests protected in every possible way

One of the concluding articles in the Instructions to Physicians is worth producing —

> "And as sickness generally depresses the spirits it becomes not only your duty, but that of every person who attends the patients, to sooth and cheer their minds by the most humane attention, to hear with patience all their complaints, to explain and redress, as far as possible, whatever they may think grievances by every expression of consolatory kindness which will naturally inspire them with confidence, exhilarate their spirits, and add to their hope of recovery, to which it cannot fail to contribute.

THE AGENT.—This officer would appear to correspond with the present day Officer in Charge of Stores. He was in charge of the effects of all patients also bedding stores, portable soup, lemon juice and other necessaries for issue to H.M. ships and vessels on commissioning agreeably to the proportion specified in an established scale, and to replenish such stores on demand as required. Special instructions were given that articles which had been longest in store were to be issued first.

Patients were supplied with slop clothing and the cost entered in the Muster Book and on the patient's ticket when he was discharged.

The agent was responsible for making an annual abstract of all stores held on his charge on June 30, such stores being surveyed by officers appointed for that purpose and the survey form sent to the Commissioners. This routine continued to be carried out in all Naval Hospitals until quite recently.

The agent or his clerk was responsible for the mustering in and out of all labourers and male servants, thus keeping an exact account of their lost time in order to estimate their wages correctly at the end of the month. Such persons as were present had a perpendicular line thus (|) set against their names; those absent on leave were distinguished by the mark (✓) and those absent without leave had a cross (X) put against their names. These marks are used at the present time *vide* Article 202 of the Instructions for Naval Hospitals.

A Monthly Muster Book was kept containing a correct account of the time of entry and discharge of all patients received into the hospital observing that every man sent from a ship for admission brought with him a ticket, in the form prescribed by Act of Parliament, signed by the Captain, and no man was to be admitted without the ticket.

The present day regulations relative to the receipt and disposal of patients' arms, clothing and effects applied in 1808, and there is very little alteration in the wording. A serjeant attended periodically from the Marine Headquarters to clean the arms and accoutrements of Marine patients.

The agent was responsible that the clothing of patients suffering with infectious diseases was boiled in water for a quarter of an hour and then properly washed to prevent the spreading of infection. In some cases clothing was burnt and it was then the duty of the agent in conjunction with one of the Lieutenants to appraise the value of same and to pay the patient the amount thereof on his discharge from hospital.

On some occasions owing to the number of sick in hospital, there was not sufficient accommodation for officers and it was part of the agent's duty to procure quarters for them in private houses, in the most healthy situations.

The agent or his clerk mustered the patients every evening in their wards at sunset, and the centinels round the outer wall were informed of the absentees. From the frequent reference to precautions to be taken

against desertion it appears that there were many attempts to escape over the hospital walls

A weekly return was rendered to the office of the Commissioners, showing the numbers of patients, their ships and diseases, invalids remaining and particulars of the civil staff, corresponding to the present Hospital Form M 15

Reference is made in the Agent's Instructions to men D S Q'd

According to the regulations all ratings sent sick from ships and establishments were subject to hospital stoppages after thirty days sickness After ninety-one days in a home hospital the whole of their pay and allotments ceased and they were then discharged from ships books to sick quarters—hence the term D S Q'd

It was the duty of the agent to inform the Navy Board of all such cases

It was directed by Act of Parliament that Petty Officers Seamen and Marines, if wounded in action with the enemy, should receive the full amount of their wages until their wounds were healed or being incurable, pensioned from the Chest at Greenwich or admitted into the Royal Hospital at that place

Ratings D S Q'd, if not invalided were re entered on the ships books for pay on the day they rejoined their ships after discharge from hospital, the intervening time being lost for all purposes of pay badges, promotion and pension

This regulation remained in force up to the time of the Great War (1911-1918) over one hundred years It was amended during hostilities and finally abolished by Admiralty Weekly Order 1809/19 which stated

> Hospital Stoppages to be only applicable to ratings whose disability is due to misconduct carelessness or neglect

The agent had to prepare the Wills of patients, after the sanity or proper state of mind of the patient had been certified by the physician or surgeon attending the case

The Effects of Dead or Run Seaman, if unclaimed for two months or more, were disposed of by the agent as follows —

> Public notice of the sale was given and the sale took place *without* the Hospital Gates The Governor, a Lieutenant and the Agent were present Each Lot was put up at a sum considerably above its supposed value and gradually reduced in sum until some person offered to take the Lot It was not however knocked down to him until it was publicly asked if there was any higher bidder The best bidder was the purchaser No persons belonging to the hospital nor any person on their account were permitted to purchase The money so obtained was credited to The Crown in the Agent's Cash Account.

Stores or necessaries belonging to the public which had been condemned by survey as unserviceable were sold in the same manner

The Effects of Dead or 'Run' Marines were handled over to the Commandant of Marines at Headquarters to be dealt with there.

The agent paid the wages of inferior officers and servants monthly, superior officers quarterly. As regards the latter a list was made out showing the amount due to each officer and the agent was instructed "to pay the same to them respectively, taking care that in making out this list you deduct the usual abatement of threepence in the pound from naval officers, and such persons as are surgeons in the Navy on account of the Widows' Fund."

An account of the total expenses of every kind incurred for the hospital from January 1 to December 31, had to be prepared and forwarded into office. This return was rendered until quite recently the only alteration being the period—April 1 to March 31.

The agent was furnished with printed abstracts of the Acts of Parliament regulating the payment of Seamen and Marines and these were placed in conspicuous parts of the hospital, accessible to all concerned.

He was forbidden to have any interest, directly or indirectly in any provision or stores purchased for the service of Government, or to receive any fees or gratuity or reward from any contractor or tradesman.

In addition to the oath and bond given in three times the amount of his salary, he had to enter into another bond with two sufficient sureties in the sum of £1 000, for duly accounting for all monies and stores committed to his charge.

The foregoing define the principal duties allotted to the agent and in the final paragraph of his instructions it states —

> "and in cases for which no particular directions can be furnished it is incumbent on you to employ all possible diligence and attention to expedite and promote the welfare of the Public Service to the utmost of your power."

Dispensers.—The dispenser had charge of all stores, medicines drugs, &c., for hospital use and also the separate stock lodged at the hospital for supplying His Majesty's ships and vessels. Until quite recently both hospital and service afloat stores were kept quite separate, but are now combined in one general stock.

The physicians and surgeons superintended daily in rotation the duties of the dispensary and inspected all articles supplied for its use both as regards quality and quantity. Medical officers also scrutinized the demands of the dispenser to decide as to the necessity of all or any part of the demand, and, from the instructions issued, were held to be generally responsible for the efficient administration of the dispensary.

The Governor in all his papel transactions simply signed dispensary accounts, &c., as the transmitting officer.

Strict were the orders relative to the economical use of phials, bottles, &c., so strict, that broken bottles and phials of every description had to be

saved and delivered to the steward to be sold with other unserviceable stores

If a shortage occurred in the hospital stores, the dispenser was authorized to take requirements from the service afloat stock using first such as may have been returned from ships or may have been longest in store

Old linen was issued for bandages, &c. and new linen was not to be used on any occasion where old linen would answer the purpose

With a view to ensuring that the medicines and stores in charge of the dispenser were not used for other than Service purposes, the expenditure had to be sworn to quarterly. The instruction to this effect was as follows —

> 'You, together with your Mates are, at the end of each quarter, or oftener if we require it, to make oath before a magistrate, in the annexed form that you have not in the time therein mentioned dispensed, issued or used, or suffered to be dispensed, issued or used any medicine, drug or necessary, with which you have been entrusted, but according to the directions you received for that purpose from the Physicians and Surgeons, or by the authority of the Governor for the use of His Majesty's ships as hereinafter directed excepting such medicines only as you may require for the use of your own family and servants. This affidavit is to be delivered to the Governor, in order to its being transmitted to this Office.' (Navy Department.)

The dispenser was directed to confine himself to the practice of his profession, strictly and exclusively for the public duty of the hospital and not to visit attend or prescribe for any patient in or out of the hospital except for himself and family, or in any way be concerned in keeping a shop for the sale of medicines drugs or other articles.

Like other officers of the hospital the dispenser had to take an oath and give the usual bond.

Chaplain.—The instructions for the chaplain are few, but very definite. In his absence he was required "to procure some person in Holy Orders, who shall be approved of by the Governor, to perform duty for you during your absence."

Divine Service was to be performed according to the Liturgy of the Established Church of England, with due solemnity in the chapel of the hospital, twice on every Sunday throughout the year and also on Christmas Day, Good Friday, and all days appointed for public feasts and Thanksgivings, and to preach a sermon, both in the morning and afternoon, on Good Friday, and on every Sunday from Lady Day to Michaelmas Day and on all feasts and Thanksgiving days which occurred during that period. During the remainder of the year he was required to preach in the morning only.

The chaplain was enjoined to be careful to adapt his discourses and

instructions to the capacity of the generality of his congregation, in order that they might be intelligible to all who heard him.

THE STEWARD.—The steward had charge of all the provisions, stores, furniture, bedding and necessaries furnished for the use of the hospital and was responsible for the economical and faithful expenditure thereof.

The account which the steward kept of his receipt of provisions and stores had a duplicate which was kept in the Governor's office. On receipt of stores an account was entered in the Governor's copy and signed by the Lieutenant on duty and the steward. This duplicate was immediately returned to the Governor's office by the Lieutenant, and served as a check against the steward's account when it was laid before the Governor.

The routine laid down for diets differs but little from the present day routine. The diets consisted of full, half, low and casualty. The half has since disappeared but the others remain. As is the case now, no patient was victualled in the diet book on the day of admission but in a casualty diet book until included in a ward diet book.

Diet books (now diet sheets) were sent to the steward after completion by the ward medical officer. These were abstracted, totals of the various quantities of provisions arrived at, and demands made on contractors.

The agent was notified daily by the steward of the number of patients in each ward for the purpose of facilitating the evening muster.

The agent in his turn reported to the steward each morning the total number of patients mustered by him the previous evening, specifying the number of patients who had died or deserted since the previous day.

The regulations for the proper supply of provisions if carried out, ensured that the patients were dealt with fairly as the following extract from the agent's instructions show:—

> 'You are to cause a printed copy of the scheme of diet for the time being, to be constantly hung up in some conspicuous place in each ward; you or your clerk with any number of patients, not exceeding six, who may choose to attend, for seeing justice done to the whole are to be constantly present at the weighing and cutting up of the meat and see it properly and fairly allotted to each ward.
>
> "No preference is to be shown to the Servants of the hospital by allotting to them choice pieces of meat, to this end you are to cause their allowances to be cut up from whole quarters into so many pieces as may be necessary which are to be put into a tub, covered over, and pricked for by the Servants in the manner practised in the Navy.

The issue of coals, and candles, &c., was governed by a scale approved by the Navy Board and was not to be exceeded without a particular order from the Governor. The amount of soap issued to the laundry was limited to 1½ lb. to each washer per diem.

The hospital oil lamps were attended to by the plumber and he was responsible to the agent for this duty who supplied him with such proportions of oil, established according to the season of the year.

Ward stores were held on inventory from the steward the routine in this respect being as at present, substituting Ward Matron for Ward master

All articles of the public stores on being received were marked with the broad arrow and none was allowed to be sent out of the hospital without an express order in writing from the Governor

From the foregoing it will be seen that the steward was mainly a store officer with apparently plenty to do as he had to prepare and keep twenty five different books and forms in connection with his accounts He was allowed clerks (number not stated) and a butler, and required to enter into the same bonds as the agent

Ward Matron—The ward matron was in charge of all linen, dresses, stores utensils and necessaries issued to the wards on inventory

It was her duty to visit the wards daily to see that the patients were kept clean and the instructions of the physicians and surgeons carried out To supervise the conduct of the nurses employed in the wards

Generally speaking the Ward Matron performed duties similar to those of the present day Head Sister except that the latter has no responsibility as regards stores

In addition to these orders others appear in the book applicable to porters who had charge of the hospital gates and carried out police duties, such as searching carts, parcels bags and luggage of every kind leaving the hospital They also searched work people if suspected of concealing Government stores on their persons

There was also an overseer of labourers who superintended the workmen employed in the hospital whose orders mainly referred to keeping the grounds and paths clean and free from smoll

The Appendix of our book shows specimens of all the forms in use, it also includes the scheme of diet for the Royal Naval Hospitals, which consisted of the following —

Full Diet

1 pint of tea morning and evening
(1½ drm of good souchong tea 7 drm of good muscovado sugar and one sixth part of a pint of genuine milk to be allowed to every pint of tea)
16 oz bread
16 oz beef or mutton
1 pint of broth
15 oz of greens or good sound potatoes
2 quarts of small beer
(This latter was altered to 2 pints from April 1 1828)

Half Diet

Tea morning and evening as above
16 oz bread
6 oz beef or mutton
8 oz vegetables
1 pint of broth
3 pints of small beer
(Afterwards reduced to 1 pint in April, 1828)

Low Diet

Tea as before
6 oz bread
2 oz butter, or in lieu of butter, 1 pint of milk ½ pint of broth or such additional quantity thereof as might be prescribed

In addition the physicians and surgeons were permitted to issue extras such as fish, fowl, veal or eggs according to the nature of the case

Medical comforts issued from the dispensary included barley water acidulated with lemon juice, toast and water, water gruel lemon water vinegar whey, balm and sage tea

Each patient was issued with ½ oz salt and 1 oz vinegar daily

The Appendix also shows proportions in which medicines utensils and fumigating articles were to be supplied to His Majesty's ships and vessels (In these days we refer to it as the Service Afloat Scale)

It is not a large scale but it contains many medicines and utensils which are still in use

There were 6 scales ranging from 1st rate down to 6th rate ships and 1 each for sloops and cutters, making 8 in all

An outstanding item shown in the scale for a 1st rate ship is Magnesiæ sulphatis, 150 lb

The various utensils, bedding and medical comforts allowed to H.M. ships were supplied from the dispensary store of R.N. Hospitals and here also we have a scale 1st rate ships were allowed 20 beds, 2nd rate ships 16, and so on down the scale until we get to sloops which were allowed 3 Cutters &c., were not entitled

(To be continued)

Clinical Notes

A NOTE ON TONSILLECTOMY

By Surgeon Commander J. A. Maxwell, M.B., B.Ch. F.R.C.S.Edin. R.N.

The extent to which tonsillectomy is performed nowadays, has become the subject of discussion in civil practice The operation is very frequent in the Service also

At Royal Naval Hospital Malta, between 1928 and 1934 300 are recorded and this represents a serious expenditure of time and work both by medical staff and patients

The modern procedure of complete enucleation by dissection is a major operation, at least as difficult as most appendicectomies, and more severe for the patient

Serious complications, such as lung abscess, are rare in this country, but have been reported repeatedly in America while secondary hæmorrhage may be obstinate and debilitating

The tendency to regard the operation as trivial is a relic of the old days of haphazard technique

The axiom should be remembered that no operation should exceed in gravity the risk it is designed to cure and tonsillectomy must not come to be regarded by the cynical as a harmless surgical exercise practised with impunity by aspiring surgeons

It is worth while then, firstly to scrutinize and define acceptable indications and secondly to attempt to assess the value of the operation

INDICATIONS

(a) Quinsy A history of quinsy is considered an urgent indication—as not only is recurrence deplorable, but sepsis is likely to remain in the supratonsillar tissue and to cause damage even without further acute symptoms

(b) The persistence of K L B in the throat can sometimes be cured only by tonsillectomy

(c) Chronic otorrhœa will frequently clear up when tonsils and adenoids are removed, and the removal of adenoids is, in these cases the more important part of the operation

(d) As a preliminary precaution to eliminate sepsis prior to abdominal and other surgical procedures

The above indications are probably generally acceptable We come now to others more debatable

(e) A history of repeated sore throats incapacitating the patient for days at a time two or three times a year—with secondary anæmia and debility It has been pointed out by Bedford Russell [1] that such recurrent sore throats may not be primarily tonsillar, but secondary to latent sinus infection If ears, nose, throat and sinuses be regarded as parts of one cavity and if all parts be examined in every case it should be possible usually to decide where the chief mischief is, and to avoid overlooking any gross disease present in addition to the tonsillar inflammation

The next indication is the most debatable and needs careful definition The cases form a large and important group

(f) The presence of pus or distinct from caseous debris in or above the tonsils, in association with general or local symptoms which have resisted other treatment

The symptoms usually met with include arthritis, fibrositis P U O, indigestion and debility Such symptoms may occur in patients with apparently normal tonsils and on the other hand many people seem to tolerate very septic tonsils and teeth without being demonstrably the worse But when such symptoms coincide with tonsillar sepsis and have resisted other treatment tonsillectomy is reasonable and often highly successful No constant relation between successful operation and any special organism has been found except that the hæmolytic streptococcus seems to be most often the villain of the piece A constant and specific bacteriological finding in the tonsillar pus would go far to enable the dramatically successful case to be diagnosed, before operation from the disappointing ones These being the indications which are held to justify tonsillectomy what proofs are there of its success?

On general and empirical grounds (often more cogent than more rigid statistics) it may be suggested that the fact that large numbers of men submit voluntarily to an operation the unpleasantness of which must by now be widely known, tends to show their confidence in it though a few may be 'operation addicts' or very stoical 'lead swingers' Moreover the operation has survived a propaganda against it which has overflowed from the professional journals into the lay press, and is of a kind which usually appeals keenly to the modern critical patient Can the matter be put to closer test?

It should be possible under Service conditions to establish a follow up system (as has been done in the case of hernia), and to check the morbid by rates for patients before and after operation That this calculation would be full of pitfalls and fallacies is certain, but it would be better at least than the comparison of patients who have had their tonsils out with those still keeping them, a comparison uncontrollably complicated and fallacious

A scrutiny of Medical History Sheets for a series of men from three years prior to operation to three years after it, would help to prove whether or not the operation has benefited them and the Service, even though complicated by the varying age factor It should be possible to decide from the entries what tonsillectomy was designed to cure, and from subsequent entries to assess in some degree its success or failure The mere fact of such an investigation being attempted would also steady and control the tendency to operation on too ill considered grounds

REFERENCE

[1] Bedford Russell *Brit Med Jour* September 12 1931

EVIPAN SODIUM ANÆSTHESIA IN DENTISTRY

By Surgeon Lieutenant Commander (D) R M Hinchson L.D.S. R.N.
and
Surgeon Lieutenant W J M Sadler M.R.C.S. L.R.C.P. R.N.

We have considered this anæsthetic from three points of view (1) The patient's (2) the dental surgeon's (3) the anæsthetist's

(1) From the Patient's Point of View

It seems only right to consider evipan anæsthesia firstly from the patient's point of view Looked at from this aspect it would appear to be the ideal anæsthetic The patient remembers nothing except the prick of the needle after which he loses consciousness in from ten to fifty seconds and knows no more until he wakes from a natural sleep anything from a quarter of an hour to two hours afterwards There are none of the unpleasant sensations associated with the inductive stage of the ordinary general anæsthetics With regard to after effects, in the majority of cases there are none Some few patients feel confused and dizzy on coming round but these sensations always pass after an hour or two's sleep In our series there was no vomiting except in one case who was given other after evipan this patient however, on waking some three hours later, had no recollection of vomiting and no headache, in fact he felt so well that he ate a meal In some few patients there is a short stage of excitement resembling drunkenness immediately on coming round The patient, however, never remembers this

We have dealt at some length on this aspect of evipan anæsthesia as it would appear to us to be one of the greatest advantages of this anæsthetic doing away completely as it does with the patient's dread of an anæsthetic

(2) The Dental Surgeon's Point of View

From the point of view of the dental surgeon the introduction of evipan sodium marks a definite advance in general anæsthesia for dental operations The following observations were made after completion of a series of cases —

(*a*) The relaxation of the elevator muscles of the mandible is very marked, and is obtained concurrently with a comparatively transient anæsthesia. This is not usually possible with the general anæsthetics

(*b*) There appears to be less hæmorrhage at the time of operation It is claimed that during anæsthesia there is a fall of blood-pressure of about 20 mm of Hg This was confirmed by observations made by Surgeon Captain McCowan R N

(*c*) There is a definite saving of time The combined induction and operating time when evipan sodium is used, is usually less than the induction period of ether

(3) From the Anæsthetist's Point of View

Evipan is a barbituric acid derivative, and according to the latest views on anæsthetics works, as do the other anæsthetic agents, by depriving the brain cells of a part of their oxygen supply When any hypnotic of the barbituric acid type circulates in the blood stream a certain percentage is taken up by the brain this percentage is a constant for any given barbiturate. The amount remaining in the blood stream must be lessened by excretion or decomposition before re absorption from the brain cells takes place The hypnotic effect passes off according to the rate of reabsorption [1]

The percentage of evipan taken up by the brain is high but the rate of decomposition in the liver is rapid The percentage ratio in the blood is maintained by reabsorption from the brain until in due course all is removed by the process of detoxication by the liver Hence the depth yet transience of evipan anæsthesia [1]

Bearing these facts in mind, the following technique has been used by the authors in dental cases A 10 per cent solution of evipan sodium is injected intravenously 3 to 5 c c being given in the first fifteen seconds Then a pause of thirty seconds to allow for a complete circulation of the blood Before the end of this initial period the patient is asleep, the injection is then continued at the rate of 1 c c per ten seconds until the required depth of anæsthesia is obtained The extractions are then begun immediately With a full dose of 10 c c, to 1 gram evipan, full anæsthesia lasting from ten to twenty minutes is obtained With smaller doses anæsthesia for shorter periods is obtained In our series of cases, mainly Royal Marine recruits (ages 17 to 20) at least 6 c c has been necessary to obtain full anæsthesia for dental extractions With smaller doses than this there has been struggling, but even in those cases there has been no memory of anything save the preliminary injection

In some cases after the preliminary injection there is twitching of the limbs with a tendency for the needle to slip out of the vein and there is often considerable difficulty in getting it back again In one case in our series there was complete failure to obtain anæsthesia owing to this accident In one other case the needle slipped out of the vein after injecting 5 c c of evipan and the patient was given open ether in order to obtain anæsthesia In neither of these cases did the patient remember anything beyond the preliminary injection

It is essential throughout the anæsthetic to maintain a good airway, and the nursing staff must be warned to pay particular attention to this during the recovery stage

In healthy adults evipan would appear to be a safe anæsthetic [2 3], provided a good airway is maintained The full therapeutic dose of evipan is one fourth the minimum lethal dose [3] A definite contra indication is any impairment of liver function

In a series of twenty one cases one was a complete failure and one was given ether to complete anæsthesia Both of these failures were due to accidental slipping of the needle from the vein after injecting only 5 c c of evipan The remaining nineteen were completely successful

Summary

Evipan sodium has been found to be a satisfactory anæsthetic for dental surgery, particularly from the point of view of the patient and has been found to

possess the advantages of gas and [illegible] anesthesia [illegible] difficulties

REFERENCES

1. [illegible] British Dental Journal October 15 1934
2. [illegible] Journal of Dental Research May 5 1933
3. [illegible] Ibid 1934

A CASE OF BRONCHIAL CARCINOMA WITH SECONDARY DEPOSITS IN BRAIN AND LIVER

By Surgeon Commander P L Gibson D M Ch B R N

The patient, aged 29 was admitted to R N Hospital Haslar, on June 6, 1934

He complained that towards the end of March 1934, he began to pass larger quantities of urine and to urinate at more frequent intervals than formerly He also suffered from excessive thirst and complained of increasing general weakness fatigue and loss of appetite He reported sick in May, 1934 and was treated for a time by daily injections of 0 5 c c pituitrin under this treatment the volume of urine decreased and his thirst was controlled His general condition did not show a corresponding improvement and on June 6 he was admitted to hospital

Family history Nothing relevant elicited

Past history His history sheet showed six entries for catarrh and tonsilitis and one for pleurisy (right side) in 1924

Condition on admission to hospital Patient is very thin and pale, with prominent cheek bones and sunken eyes His tongue is red and a little sore

Teeth good and tonsils healthy

Heart Examination revealed no abnormality, and lungs appear healthy

Abdomen Soft and moves freely Liver is somewhat enlarged, otherwise no abnormality is noted

Eyes Pupils react to light, are equal Fundi healthy

X ray of skull showed no evidence of abnormality in region of pituitary fossa

Urine Sp gr 1008 reaction acid No albumin or sugar present Deposit showed a very occasional leucocyte and epithelial cell Quantity 84 oz in twenty four hours

Blood pressure 116/84 Pulse rate 72

Blood count White cells 9,200; red cells 4 450 000, haemoglobin 90 per cent, colour index 1 0

Differential blood count Polymorphs 36 per cent small lymphs 55 per cent, eosinophils 2 75 per cent basophils 1 50 per cent large mononuclears 6 75 per cent Blood Wassermann Negative

Progress While the investigations in this case were in progress on June 11 without warning, the patient had two fits, which consisted of clonic muscular contractions of the whole body (there was no tonic stage) and finishing with conjugate deviation of head and eyes to the right There was incontinence of urine and faeces during the fits and a prolonged period of coma ensued after each fit On the following day, though the patient was a little confused mentally, he was otherwise rather better

Examination of his nervous system showed considerable muscular weakness of arms and legs the tendon jerks on the left side were brisker than on the right, the plantar responses were flexor In the eyes the fundi showed marked congestion

Blood pressure, following these fits, appeared reduced June 13, blood pressure 104/98 June 15 108/56

Lumbar puncture was performed on June 13 and 7 c.c. of clear fluid were drawn off. The pressure appeared to be slightly increased.

Examination of this cerebro-spinal fluid showed: Chlorides 722 mgm. per 100 c.c.; sugar 63 mgm. per 100 c.c.; globulin not in excess; cells 4 per c.mm.; colloidal gold normal; blood urea 75 mgm. per 100 c.c.; blood sugar 112 mgm. per 100 c.c.

Later, when a lævulose tolerance test was carried out, though the curve was normal, the blood sugar level was low, sinking to below 50 mgm. per 100 c.c.



blood. During the next few days the improvement was on the whole maintained, but the total quantity of urine increased to about 200 oz. daily; this was reduced to under 100 oz. daily by 4 c.c. pituitrin daily. Following this he showed evidences of mental derangement, passing urine into his drinking cup at night, and he developed attacks of cerebral vomiting.

The main features of the case on June 26 were: (1) Polyuria, controlled by pituitrin; (2) mental changes of a general nature resembling that described as mental bebetude; (3) a low blood pressure with a small pulse pressure; (4) a big

liver (5) two fits in one day, about fourteen days previously (6) vomiting of a cerebral type irrespective of food

A frontal lobe tumour affecting the pituitary gland and floor of third ventricle was thought to be a possible diagnosis though this did not explain the enlarged liver Amœbic abscess of liver and brain were also considered

In order to forward the exact diagnosis, a fractional encephalography was decided upon



On June 28, fractional encephalography was carried out through the lumbar route, 15 c c of cerebrospinal fluid being removed and replaced by 10 c c of sterile air At the same time an X ray examination of the chest was carried out The results of these investigations revealed a dense opacity in the middle zone of the left lung obscuring the left border of the heart The liver showed some downward enlargement The left side of the brain showed a denser and larger ventricular shadow than the right, the whole showing distortion suggestive of pressure from the right side

The diagnosis now appeared to be clear—a new growth in lung brain and liver, the probability being that the primary growth was a bronchial carcinoma with secondary deposits in brain and liver. Unfortunately confirmation of the diagnosis was not long to be withheld as the patient gradually sank and died on July 4, 1934. Post mortem revealed a nodular growth at the hilum of the left lung and enlargement of mediastinal glands. The liver was enlarged and studded with secondary deposits. The brain showed thickening and adhesion of the dura mater over the left half in the midline at the vertex, both ventricles were somewhat dilated and there were two small nodules in the brain substance.

Report on sections of growth. From lung, liver, nodule in brain and from pituitary gland all showed this to be an adenocarcinoma.

TWO CASES OF BERIBERI

By SURGEON LIEUTENANT-COMMANDER HUGH WILLOUGHBY DE H. D.T.M. & H. R.N.V.R.

S.S. ——, arrived on January 1, 1935 from certain ports in the Persian Gulf via New York, a voyage lasting some seven weeks.

Case 1.—On the arrival of the ship, M. E., aged 27, Lascar wiremen, was reported to the Boarding Medical Officer to be suffering from "weakness, possibly malingering." Inquiry revealed the fact that he first reported sick seven days before arrival of the ship at New York; he then complained of "weakness and cramps in the legs." No diagnosis was made at that time except that he was possibly a case of malingering.

When first seen the man was found lying in his bunk under the poop; he looked ill and groaned considerably on turning in his bunk.

On Examination.—Lungs: Respirations were jerky, but percussion note, air entry and breath sounds revealed no abnormality.

Cardiovascular system: Pulse on right side was felt with difficulty, the left pulse was normal in rate, rhythm, volume force and tension.

Heart: Diffuse pulsation was visible over the precordium. The apex beat was in IV space 5 in from midline. On auscultation, a systolic murmur was audible over the whole cardiac area and the pulmonary second sound was reduplicated.

Abdomen: No evidence of abnormality discovered.

Glandular system normal.

Central nervous system: Pupils equal regular and reacted normally to light and accommodation. Superficial reflexes present and normal. Deep reflexes: Knee-jerks, ankle jerks absent on both sides. No plantar response was obtained. The skin of the trunk and of both legs was hyperesthetic and pressure on the calf muscles caused intense pain.

Gait on walking (with assistance) was typically high stepping and both calves were in an emaciated condition disproportionate to the muscular state of the remainder of his body.

No œdema was present.

Case 2.—Having tentatively diagnosed Case 1 the crew was mustered and, after inspection marched forward when the gait of S. O., aged 30, Lascar attracted attention.

This man, on interrogation admitted having weakness in his right leg and tenderness of the right calf muscles. Examination revealed absence of ankle jerks in both legs and absence of both plantar responses. There was no œdema. Sensation was entirely lost in the right foot and lower part of the right leg. Pins could be stuck into his right leg and foot without the patient feeling them. The

heart showed some right sided enlargement and the pulmonary second sound was reduplicated

Beriberi is so rarely seen now in vessels arriving in the Thames that I removed both cases for admission to the Hospital for Tropical Diseases Endsleigh Gardens, and I am indebted to Dr P H Manson Bahr for their subsequent history

Certain points of interest arise in these two cases

(1) Case 2 was unilateral, the right leg only being affected Whether this was due to the early stage of the disease at which the case was picked up I am unable to state Furthermore whether the case would have become bilateral if left untreated, can only be conjectured I should appreciate experiences of your readers on this point as unilateral beriberi is not described in the textbooks, and Dr Manson Bahr has he tells me, never seen one previously

(2) Inquiries elicited the fact that unpolished rice was provided on board but was not eaten by any of the Lascar crew who preferred the polished variety Green vegetables were lacking a very limited amount of white cabbage was used practically exclusively by the European crew during part of the voyage

(3) Case 1 had extensive aphthous ulceration of the mouth

Treatment —Both cases were treated dietetically with marmite, green vegetables glucose, orange juice &c, and were given digitalis by the mouth Case 2 made a quick recovery and was well in two weeks but Case 1 is still under treatment seven weeks after admission and still has a typical gait, although now able to walk unassisted

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A CASE OF BERIBERI

SURGEON COMMANDER J H B CROSBIE MB BCH RN
AND
SURGEON LIEUTENANT COMMANDER T L GLAVE MRCS LRCP RN

Owing to the infrequent occurrence of this disease in the Navy the following case is of unusual interest

A boy aged 17, was discharged from his ship at Split, Yugo Slavia, to H M Hospital Ship *Maine* in October 1924 during the second summer cruise of the Mediterranean Fleet For the previous month he had complained of pain in both knees and swelling of both ankles which came on when he walked about, disappeared when he went to bed for a day or two but recurred on getting up He also complained of pains in his calves and an 'unusual sensation' sometimes painful which extended down the inner sides of both tibiæ from his knees to his ankles occasionally both his thumbs felt a little numb Previous to reporting sick the boy had been employed as a messenger between decks, and had pulled in his boat's crew while training for the regatta Family and previous history—*nil* relevant elicited

EXAMINATION —Detailed examination revealed the following signs —

CENTRAL NERVOUS SYSTEM *Gait*—Feet were lifted higher than normal both great toes were slightly dropped and there was some unsteadiness on turning

Movements —Power of extension of both great toes lost, slight extension of little toes possible There was some loss of power in dorsiflexion of both feet. All other movements, &c were normal

Sensations —Heat and cold Normal Pain and touch, diminished over the inner sides of both calves and on inner sides of both tibiæ Both calves were tender on deep pressure

[illegible] Knee jerks Right faint response Left not obtained Ankle jerks Present Romberg sign Slight instability Remainder of reflexes were normal

Cardiovascular System.—Pulse rate varied from 80 to 90 per minute Marked throbbing of the neck vessels was present A faint localized systolic murmur was present over the base of the heart

On being sent up for an x-ray examination of the heart a marked excessive enlargement of the right side of the heart was detected, there being no obstructive lesion of the lungs and no enlargement of the left heart to account for this



X-ray showing right sided enlargement of the heart

Pulmonary System.—No abnormality detected
Urine.—Normal
Blood count.—Showed slight anæmia
Wassermann.—Negative
Gums and Mouth.—Normal
Thyroid.—Slight general enlargement present

On being questioned about his diet the boy stated that he had the usual food of his mess He did not eat many potatoes he had eggs about two a week

During the first summer cruise, in July and August, fresh fruit and vegetables were difficult to obtain and those he had were tinned According to the 1934

edition of Tidy's Synopsis of Medicine, where [illegible] the absence of which crucial symptoms of beriberi in ninety days), is not [illegible] ained foods

The x ray appearance of the heart in [illegible] with the peripheral neuritis (toxic cause being eliminated) the characteristic [illegible] sensations, and the history leave little doubt that the diagnosis of the case was one of beriberi

Treatment.—The boy was put on a diet rich in vitamin B 1

Progress while in *Maine*.—Shortly after admission, both knee jerks were completely lost After about three weeks a gradual improvement slowly commenced

On January 2, 1935 he was brought forward for survey and invalided to the United Kingdom By that time the throbbing of the neck vessels was much reduced, the cardiac murmur was only audible when the boy was recumbent, pulse rate varied from 64 to 80 X ray showed a definite diminution in the right side of the heart The calf muscles were considerably wasted but the sensations over the tibiæ were much more normal All abnormal sensations had disappeared from the thumbs dorsiflexion of the feet and toes had very greatly improved, and consequently his walking also the œdema was absent

The right knee jerk was moderately well marked while the left gave a faint but definite response

Both ankle jerks were still unobtainable

Rombergism was absent and the patient felt considerably stronger

The explanation why this boy alone should have contracted this disease would appear to be a lack of reserve of vitamin B 1 in conjunction with his low consumption of vegetables

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PURPURA HÆMORRHAGICA ASSOCIATED WITH ARSENOBENZENE TREATMENT OF SYPHILIS

By Surgeon Commander A de B Joyce M.B. B.Ch. R.N.

The patient was one of five ratings who contracted lymphadenoma inguinale during August, 1934, in a port in the Eastern Mediterranean They all visited the same licensed house, and it is possible they were all infected by the same individual Three of the cases were treated in Royal Naval Hospital, Malta, one on board his ship, and another in H.M.S. *Maine*

Two of the cases treated in R.N. Hospital had enlarged glands in the left groin, and one in both groins There were no sores or scars, and the drainage areas appeared free from infection Temperatures were between 100° F and 102° F., and pulse rates averaged 90 The cases which subsequently developed purpura hæmorrhagica had a positive Wassermann reaction his cervical, axillary and epitrochlear glands were palpable He was treated as a case of syphilis, and given local treatment with glycerine and ichthyol 20 per cent to the buboes He was given four injections of N.A.B. 0.3 gram on August 20, 1934 0.45 gram on August 23, 1934 0.45 gram on August 27, 1934, 0.45 gram on August 30, 1934, and bismuth, 0.5 c.c. intramuscularly

On August 31 he developed a purpuric rash on his legs and bleeding from the oral mucous membrane For the following four weeks he was seriously ill There was bleeding from the mouth, nose and pharynx hæmaturia and melæna were present and subcutaneous hæmorrhages at sites of hypodermic needle punctures

On September 7, 1934 his blood count was as follows Red blood cells 4,970,000, white blood cells 15,000 hæmoglobin 96 per cent colour index 1.0 polymorphonuclears 64 per cent, lymphocytes 29 per cent mononuclears 7 per cent eosinophiles 0 per cent

On September 17 it was Red blood cells 3,080,000, white blood cells

11 000, haemoglobin 75 per cent colour index 1·2 polymorphonuclears 65 per cent lymphocytes 26 per cent mononuclears 3·5 per cent eosinophiles 5 per cent

Numerous immature red blood cells were seen in the film. Coagulation rate = 6 mins. compared with a normal control of 5 mins. Platelets Average, 1 in 48·2 ratio. Fragility of R.B.C.s = haemolysis in 0·4 per cent saline. Control in 3 per cent saline. The urine was free from bile salts and pigments, and there was no pigmentation of skin or conjunctivæ during the first two weeks of the illness.

During the course of his disease he was given (1) ametox (2) calcium lactate (3) gluconate of calcium, and (4) haemoplastin at different times. Definite improvement was noticeable after the administration of haemoplastin. Whether this was a coincidence or not it is impossible to say. With the cessation of the bleeding his general health was restored by suitable medication. The bubbles gradually receded without incision. The fluid removed at intervals by a syringe, was never purulent, and was sterile microscopically and on culture.

Blood Wassermann and Kahn tests negative, October 9 1934.

The patient was the third of five receiving iberol and N A B on the morning of August 30, he was the only one who developed any untoward symptoms. The preparation of the patients, the drugs and their administration were identical in each case.

The occurrence of the reaction after the fourth injection of N A B is worthy of note.

It is doubtful whether it is the arsenic or the associated aminobenzene which is responsible for the altered blood conditions. Benzol does poison the bone marrow. In the experience of authorities the salpharsenobenzene preparations have been responsible for more aplastic anæmia than any of the others (Harrison and Stokes).

It is stated that about seventy cases of the group purpura hæmorrhagica, aplastic anæmia and agranulocytic angina following the arsenical treatment of syphilis have been published (Moore's Treatment of Syphilis).

AN INTERESTING MULLERIAN REMNANT

By Surgeon Commander I. Colborne R.N.

and

Surgeon Lieutenant Commander D. Duncan M.D. D.P.H. R.N.

The hernial sac in the female infant is often found to contain some of the internal genitalia, the ovary, Fallopian tube or uterus. In adult women similar conditions are much less common so uncommon indeed that several writers have considered the rarity sufficient to warrant the collecting and recording of cases. In almost all cases recorded the condition was found by a surgeon operating for an irreducible or strangulated hernia. Much more rare, however is the finding of a uterus in the hernial sac of a man. Many of the cases recorded have been in male children who had imperfectly developed external genitalia and who might, almost come under the heading of pseudo-hermaphrodites.

Some cases however have been noted in apparently normal males. Brossard reports the finding of a uterus in a sac within the tunica vaginalis testis in a man, aged 26, whose external genitalia appeared normal. Keiffer has described as uterus removed from the hernial sac of the father of eight children.

These curiosities are undoubtedly remnants of the Mullerian ducts which have persisted although the Wolffian ducts have developed in a normal manner into vasa deferentia.

This remnant of which a trace was found in the spermatic cord of a man operated on for radical cure of inguinal hernia in October, 1934.
Clinically, the condition suggested a congenital hernia containing omentum

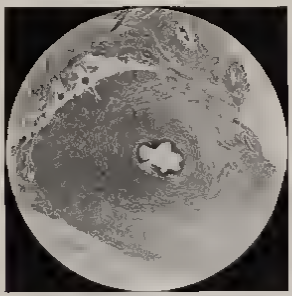


Fig. 1.—Showing the vas deferens and the epididymis and the tubular glandular structures



Fig. 2.—Section of Muller's Fluid Showing the vas deferens and the epididymis and the tubular glandular structures and the uniform transparent fluid

He was a married man, aged 31 with one child. The external genitals were normal the testicles being fully descended. The normal vas deferens was identified and a complete congenital hernia was found. The structure appeared

like an enlarged and thrombosed vein lying on the pampiniform plexus to which it was intimately connected by rather dense adhesions. It was dark brown in colour about the diameter of a cigarette and its lumen admitted a large probe with ease. The portion removed was about 3 in. long, the upper end was cut off at the level of the internal abdominal ring. The lower blind end was not connected with the upper pole of the testicle.

On transverse section the tubular structure appeared like a malformed uterus. Except that it was rather thin, its lining or mucosa was typical of the body of the uterus, having columnar ciliated epithelium which dipped down to form glands lined with similar epithelium. The stroma under the surface epithelium and around the glands was very rich in cells with small oval or spindle nuclei and small blood vessels. The richly cellular stroma is very typical of the stroma of endometrium. Outside the mucosa was a thick wall composed of bundles of

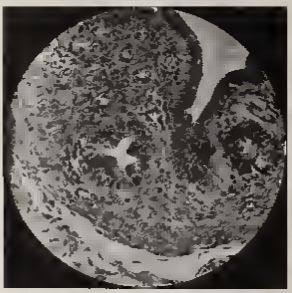


Fig. 3.—Section [illegible] in Remmann[illegible] paper, showing the columnar ciliated epithelial lini[illegible] of [illegible]nd of the gland. The nature of the stroma is evident.

plain muscle indefinitely arranged in three layers, viz. inner longitudinal, middle circular and outer longitudinal. This arrangement is unlike uterus, not quite like that of fallopian tube which has two layers but is like that of vas deferens which has three layers.

The large number of well formed glands in the mucosa and the rich cellular stroma decided against its being an accessory or abnormal vas deferens. The presence of a normal vas deferens and the fact that this specimen was not connected with it weighed also against its being an accessory or double vas.

The patient made an uninterrupted recovery and was discharged to duty one month after operation.

Reviews.

THE CONDUCT AND FATE OF THE PERIPHERAL SEGMENT OF A DIVIDED NERVE IN THE CERVICAL REGION WHEN UNITED BY SUTURE TO THE CENTRAL SEGMENT OF ANOTHER DIVIDED NERVE By Sir Charles Ballance, Consulting Surgeon to St Thomas's Hospital, from the Research Laboratories of the Royal College of Surgeons Macmillan and Co, Ltd, St Martin's Street, London 1934 Price 7s 6d net

This beautifully presented production contains a series of ten experiments, each of them accompanied by diagrams, drawings and micro photographs of a highly illuminating character There is also an accompanying foreword

The theme is briefly as follows The experiments demonstrate that anastomosis between two nerves does not result in a living union of the essential elements of the two nerves On the contrary, the peripheral segment of a divided nerve degenerates in all its essential elements The myelin sheaths and the axons both break up, but the neurilemma sheaths multiply and are full of activity, so that a new sheath is quickly formed whose function it is to facilitate the passage of new axons. At the site of the suture there is no true union of nerve fibres What one sees there is a ramifying plexus of nerve fibres, all bifurcating These are making their way through the scar tissue of the suture region and are about to form a new living nerve in place of the degenerated peripheral segment whose essential elements have been ruined already For example if the hypoglossal and the cervical sympathetic have been joined together, the peripheral segment cannot be eventually recognized as a sympathetic or a motor nerve as the case may be The whole trunk is finally seen to be composed of the type of nerve fibres which composed the proximal segment The manner of recognizing the two sets of fibres is by their calibre The sympathetic are much smaller and finer If the original peripheral segment were sympathetic, it becomes in its final condition twice the size, because it is now composed of the hypoglossal type of fibre When motor nerves were joined together, the size of the fibres was the same By this method the difference in calibre of the fibres makes identification easy

It is a remarkable fact that if the cervical sympathetic be made the central segment in the anastomosis, that it will function finally as a motor nerve In fact just as the hypoglossal neuron did before section The motor end plates have normal microscopic appearances the muscle fibres also regenerate No sign of sympathetic nerve endings is seen in the striated muscle fibres Cajal says that this result may be produced in anything between forty days and three months In all these experiments stimulation on the central side of the suture produced contraction in the appropriate muscle Thus, in a sympathico hypoglossal junction, stimulation of the pupillary centre in the hypothalamus of the same side caused contraction of the tongue On the other hand stimulation of a hypoglossal sympathetic junction in the cortical area of the other side, where the tongue muscles are represented, caused dilatation of the pupil

In all these ten experiments, performed as they were on the cat, and each between some motor nerve and the cervical sympathetic these points are borne out The whole exercise is short, excellently printed and produced, and the series is convincing It is invaluable to neurologists and to surgeons alike

MODERN TREATMENT IN GENERAL PRACTICE Edited by Cecil P G Wakeley, D Sc, F R C S, F R S E 1934 London Baillière Tindall and Cox, Ltd Pp 496 + viii, plates 16 Price 11s 6d post free

The *Medical Press and Circular* re issued, in book form in June last, the first series of articles it published under the title of "Modern Treatment in General

Practice, and so popular has the volume proved that the first edition was exhausted in just under six months, and a second large printing has had to be made. This book is made up of fifty-six chapters, each of which is written by a specialist for the general practitioner, putting before him, authoritatively and concisely, the latest methods of diagnosis and treatment. The fact that this book has had to be reprinted so soon is very clear evidence of its usefulness to the general practitioner. Doubtless its small price has also helped. We again commend this book most heartily to our readers.

CLINICAL METHODS. A GUIDE TO THE PRACTICAL STUDY OF MEDICINE. By Robert Hutchinson, M.D., LL.D., F.R.C.P., Consulting Physician to the London Hospital and to the Hospital for Sick Children, Great Ormond Street, and Donald Hunter, M.D., F.R.C.P., Physician (with charge of out-patients) to the London Hospital. Tenth Edition, revised throughout. 1935. London, Toronto, Melbourne and Sydney: Messrs. Cassell and Co., Ltd. Pp. 658 + xii, with 19 colour and 2 half-tone plates and 142 figures in the text. Price 12s. 6d. net.

There is always a pleasure in meeting an old friend, and this we do in the tenth edition of "Clinical Methods." We read that in a review of the first edition of this volume in 1897, the *Lancet* remarks:—"We have very little doubt that this book will rapidly win for itself a large measure of success." This opinion has been amply justified, so much so that we find ourselves wondering if there is a reviewer of this present edition who is not personally indebted to it, in its earlier editions, for much of his present knowledge.

Although the present edition has been revised throughout, we note with pleasure that the chapter headings remain the same and in the same order as of old, and thus we open the book still knowing our way about it. Some matter, now out of date, has been deleted, so that the volume remains in the same handy form.

We are confident that, as in the past, the end-sausage-sat-edition of "Clinical Methods" will remain the mainstay of students of medicine whether qualified or, as yet, unqualified.

MELANCHOLIA IN EVERYDAY PRACTICE. By Edwin L. Hopewell-Ash, M.D.-Lond. First Edition. 1934. John Bale, Sons and Danielsson, Ltd., 83-91, Great Titchfield Street, London, W.1. Pp. 129 + vii. Price 7s. 6d. net.

The author's intention in writing this book, is to give a clinical account of a number of functional psychoses conveniently grouped together under the term melancholia. These with associated states of mania and hypomonic excitement, constitute a group of diseases familiar enough in mental hospital work, but not always recognised when encountered in everyday practice. His theory is that manic depressive psychosis is much more common than is generally understood. He bases this clinical review on twenty-five years' medico-psychological practice, and his long experience has convinced him that there is much misunderstanding of the less typical forms of the psychoses under notice as they occur in daily routine work.

The book is divided into eleven chapters, of which Chapters V, VI and VII are of especial outstanding interest as they deal with the differential diagnosis of melancholia and its associated states, manic depressive psychosis from mania, dementia præcox (schizophrenia paranoidal psychoses) and paranoia.

The type is large and the style of writing so delightfully clear and concise throughout that it should appeal to the most fastidious, and the majority of persons should have no difficulty in reading it, and at the same time enjoying and digesting its contents, during the course of an evening. The book is well

indexed and the author's introduced case histories in the text as an illustrative scheme.

It should prove of great public value to the general practitioner for whom it is primarily intended, but at the same time it should prove equally enlightening and useful to all those interested in the subject of psychiatry.

A Short Practice of Surgery By Hamilton Bailey, F.R.C.S. Surgeon Royal Northern Hospital, Surgeon and Urologist Essex County Council, late Assistant Surgeon, Liverpool Royal Infirmary, Surgical First Assistant London Hospital, and R. J. McNeill Love, M.S. Lond., F.R.C.S. Eng., Surgeon Royal Northern and Metropolitan Hospitals, Consulting Surgeon City of London Maternity Hospital, Hunterian Professor Royal College of Surgeons, Late Surgical First Assistant, London Hospital. Second Edition. 1935. London: H. K. Lewis and Co. Ltd. Pp. 987 + vii, with 731 illustrations, of which 84 are coloured. Price 30s. net.

The first edition of this work was published in two volumes in 1932 and was sold at 20s. per volume. The present edition is contained in one volume, which, as the authors state, allows of economies which have reduced the price by 25 per cent. The first edition was confidently recommended by reviewers and as we cannot see that the present edition has deteriorated in any particular we are no more than logical in renewing our recommendation—equal value at less cost.

The first items which strikes us on taking up the book are the cleanness of its type and the profusion and excellence of its illustrations. Next, we note a feature which we believe to have been originated in the first edition—we refer to the use of two varieties of printing type. The larger type is used for the general purposes of the book, while the smaller is used for noting items of advanced surgery or rare conditions. This scheme has its definite value. The text tells us what we want to know. Giving as it does a clear word picture of the subjects dealt with we can thus visualize the condition even where it is not illustrated. The volume is not a treatise on operative surgery, yet it gives clear and sufficient direction for the operative treatment of common surgical conditions. The fact that the second edition is called for so soon suggests the popularity of the work and we sincerely recommend it to our readers not only for its surgical value but also for the pleasure to be obtained from reading it.

Injuries and their Treatment By W. Eldon Tucker, M.A., B.Ch. Cantab., F.R.C.S. Eng. Surgeon to St. John's Hospital, Lewisham, Surgeon to the London Clinic for Injuries, Baker Street, Late Registrar, Royal National Orthopaedic Hospital. First Edition. London: H. K. Lewis and Co. Ltd. 1935. Pp. 174 + xii, with 80 illustrations. Price 9s. net.

This work on the treatment of injuries is very welcome more especially as this branch of surgery has made great advances during recent years, and although there have been many articles written in the medical journals, there are up to the present only a very few textbooks dealing with this most important subject.

The first two chapters of the book are devoted to the pathology of injuries to the soft tissues and joints. The succeeding chapters give detailed description of the treatment recommended for the injuries involving muscles, tendons, joints, nerves, bruising of bone, and injury to bursæ. The treatment is based on the pathology of injuries as laid down in the early chapters, and clearly demonstrates the great importance of early mobilization with the judicial aid of support in many cases. The text is supplemented by eighty excellent illustrations and diagrams.

The appendix is devoted to a short description of diathermy and physiotherapy, but it is too brief to be of great value.

There is no doubt, to our mind, that if the treatment by early mobilisation and manipulation, &c advocated by this author, were always carried out in dealing with recent injuries to soft tissues and joints, many osteopaths would soon be looking for another career

The book is easy to read and is thoroughly recommended to the student and especially to the general practitioner

LECTURES ON MEDICAL ELECTRICITY By Elkin P Cumberbatch, M A , B.M Oxon , D M R.E , F R C P Medical Officer in Charge, Electrical Department and Lecturer on Medical Electricity St Bartholomew's Hospital Examiner in Medical Electrology University of Cambridge , Former President of the Section of Electrotherapeutics, Royal Society of Medicine ; author of "Diathermy its Use in Medicine and Surgery, &c 1934 London Henry Kimpton, 263, High Holborn, W C 1 Pp 236 + viii with 38 illustrations Price 6s net

This book is really a series of twelve lectures, which have been printed as they were delivered to students The author assumes that the reader knows nothing at all about medical electricity, so he starts at the beginning by explaining the elementary principles, and then in succeeding chapters, he takes the reader through different aspects of his subject The lectures, which are written in a colloquial manner, are very easy to read and differ greatly from the usual dry textbook style If, without any previous knowledge of the subject, anyone wishes to learn about the working of apparatus and the uses of medical electricity, he cannot do better than get this book

TROPICAL DISEASES BULLETIN Vol 31 Supplement, December, 1934 Pp 219 "Medical and Sanitary Reports from British Colonies, Protectorates and Dependencies for the Year 1932 summarized by H Harold Scott M D , F.R C P , D P H , &c , Assistant Director of the Bureau of Hygiene and Tropical Diseases Price 5s

In the fourth *Supplement to the Tropical Diseases Bulletin* published in December 1934, Dr H Harold Scott summarizes the medical and sanitary reports from British colonies, protectorates and dependencies for the year 1932 The summary includes the incidence of endemic and epidemic disease for each country and the methods taken to counter them the vital statistics the maternity and child welfare school hygiene general sanitation &c. At the end of the summaries is a table incorporating the vital statistics and other data from the main body of the reports. From the point of view of the Naval Medical Officer this supplement is of great interest and usefulness as it gives in a succinct form, information with regard to the diseases, general sanitation &c , of all the British ports visited by H M ships

News of the Service.

ADMIRALTY ORDERS

2823.—Fleet Air Arm—R N and R M Flists Temporarily Appointed to General Service or Corps Only Medical History Documents

(C W 1 80/34.—2 12 1934.)

Instances have occurred where the medical history documents (Royal Air Force Form for Naval and Marine Officers re attached to the Royal Air Force after a period of general service have not been forwarded with sufficient despatch to the appropriate Royal Air Force authority.

2. Attention is accordingly drawn to the necessity for prompt compliance with the procedure laid down in paragraph 5 of A F O 526/33.

(A F O 69 /34.)

2824.—Accidents to Naval Personnel—Report when forwarding Medical Bills etc

(N 5869/34.—27 12 1934.)

With a view to facilitating work at the Admiralty in connection with A F O 1442 Commanding Officers when forwarding claims from civilian hospitals or civilian medical practitioners for the treatment of Naval personnel are to indicate whether or not the illness is due to an accident for which a third party may conceivably be held responsible arising within the scope of A F O 646/33.

2. Provision for this notation will be made on the next reprint of Form S 36 (Claim of Civilian Medical Practitioner for attendance on Naval Rating.)

(A F O 645/34.)

2826.—Motor Ambulances Transport in London

(N 5990/34.—27 12 1934.)

Whenever transport is required for sick personnel in London or from one London station to another a report is to be made to the Medical Director General who will arrange transport by Naval motor ambulance.

(A F O 68 /34.)

***2827.—Queen Alexandra's R N Nursing Service Consulting Board**

(C E—6272/34.—27 12 1934.)

Lady Lonsdale has been appointed one of the civilian members of Queen Alexandra's R N Nursing Service Consulting Board, to succeed on 1st The Hon Lady Cochrane O B E

240 Nosological Returns

(M D G 13/35.—31 1 1935.)

In the case of a patient who has been discharged to hospital suffering from one disease and who develops a second disease whilst there such disease must be shown as a separate case in the Nosological returns and the Medical Officers Journals.

2. In recording the days sickness for each the original diagnosis should hold until the date of onset of the second disease.

***356 Warrant Wardmaster Professional Examination January, 1935 Result**

(M D G /C W 1005/35.—14 2 1935.)

The following result was obtained at the R N Hospital Haslar 21st January 1935 —

Rating	Name	O N	Present Ship	Marks								Result
				Part I		Part II		Part III		Part IV		Total
				Paper	Oral	Paper	Oral	Ops	Large	Oral	Blue	
				250	50	200	50	150	50	100	50	900
S B O P O	Dennis Thomas A	M 16412	Dryad	119	25	170	90	140	40	50	90	631	Passed
S B P O	Lisa W	M 20815	Chatham	192	45	180	95	130	30	60	45	717	Passed

***357—Warrant Wardmaster—Date of Professional Examination for**

(C W 829 85—14 2 1986)

[illegible] rofessional examinations for promotion to the rank of Warrant Wardmaster will [illegible] o annually at the R N Hospita Haslar will in future take place on the third Wednesday in January and the third Thursday in July."

(K R & I [illegible] Art 11 N Sect 11 will be amended.)

***363 Sick Berth Ratings—Advancement Temporary Arrangement—REPORT**

(N 258 85—14 2 1986)

To meet the existing shortage of ratings qualified for advancement in the Sick Berth branch Their Lordships have decided that as from 1st January 1986 the regulations governing the advancement of these ratings are as a temporary measure to be modified as follows —

(1) All Sick Berth Petty Officers will be allowed to qualify for advancement after *one* year in the rating

(2) All Sick Berth ratings will be eligible for recommendations on Forms S.507 as from the date of qualifying

(3) Sick Berth Attendants of the Portsmouth Port Division will be advanced to Leading Sick Berth Attendant on the dates when vacancies would normally occur by reason of advancements of Sick Berth Petty Officers to Sick Berth Chief Petty Officer and through men discharged to pension This is on the understanding that the aggregate number of Leading Sick Berth Attendants Sick Berth Petty Officers and Sick Berth Chief Petty Officers must at no time exceed the complement Port Division numbers of the three ratings (Although this arrangement applies at present to Portsmouth ratings only it may have to be extended subsequently to Chatham and Devonport ratings)

2 The situation will be reviewed on 1st January 1986 reports being forwarded accordingly to the depots

3 Attention is drawn to the need for Sick Berth ratings in their own interests to qualify for [illegible] ncement with as little delay as possible

(I L O 148/84 cancelled)

554 —R A N Officers and RN Officers serving in the R A N —Institution of Medical and Dental History Sheets

(C W 14783 —4 3 86)

The Commonwealth Naval Board have decided to institute Medical and Dental History Sheets for all officers of the Royal Australian Navy on similar lines to the system in force for ratings of the Royal Navy as laid down in Articles 1412 and 1433, King's Regulations and Admiralty Instructions. It will therefore be necessary for these sheets to be maintained in respect to all R A N officers serving in the Royal Navy.

2 When the R A N officers ship has been appointed either on loan or for exchange service in the Royal Navy the Medical History sheets will be issued by the Medical Director-General to the Senior Medical Officer of the ship to which the officer has been appointed and should be maintained in his custody Dental History Sheets will be issued to the Senior Dental Officer attached to the ship or to the Principal Dental Establishment ashore they will be issued to the Senior Medical Officer They should be maintained with the necessary entries recording treatment and in the same way as the Medical History Sheets and Dental Cards of Naval ratings. When an officer is detached from the Medical and Dental History Sheets should be transmitted under registered confidential cover to the Senior Medical or Dental Officer as the case may be of the ship or establishment to which he has next been appointed If no fresh appointment has been noted they shall be forwarded to the Medical Director General They should invariably accompany a patient to a Naval hospital in order to eliminate all unnecessary medical correspondence

3 When Medical Officers are completing the portion of the Medical History Sheet referring to general medical examinations only the columns referring to weight and chest need be completed

4 When R N officers are serving in the Royal Australian Navy either on loan or on exchange service the summary of Medical and Dental History Sheets in force in the R A N will be applicable to the R A N purposes and will be retained in the R A N

5 Medical History Sheets of officers are to be kept personally by the Senior Medical Officers and no [illegible] entries are to be made and the sheets are to be strictly confidential

6 If there is no Naval Medical Officer attached to the ship or establishment to which the R A N officer has been appointed the Medical and Dental History Sheets should be retained [illegible] by the Commanding Officer or Senior Naval Officer and Medical and Dental [illegible] should be added by the Surgeon or Agent or civilian practitioner regarding the treatment which has been arranged by the Service

7 These arrangements do not supersede reports required under existing R N regulations

531.—Nosological Returns

(M D G 7/8 35.—7 3 1935.)

[illegible] [illegible] 5 0 2/10 35 is cancelled.

(I F O 2/0 35.)

603.—Precautions against Anthrenus Verbasci (L.)

(N S 14437/34.—14 3 1935.)

Cases of [illegible] stores on board H M S [illegible] English, while on the Chi[illegible] station, have been found to be infested with *Attagenus Undatus* (Lep.). This insect in the adult state resembles the common ladybird, being about one twelfth of an inch long and somewhat less in breadth. The larvæ will feed on animal substances such as fur, felt, feathers, wool, hair, bristles, [illegible]. Old warships' mess rooms are sometimes infested the larvæ finding food in the [illegible].

2. The pest next in order of importance is *Anthrenus* (under discussion in para. 1), but the latter must not be taken by *Anthrenus fasciatus* (Forsk.).

3. Stores and storage places infested with this insect should be treated with [illegible] and with soft soap and water on the assumption that the Undatus is the material concerned. After all very stores may be passed through a fine meshed sieve when as much as almost can be safely given. Liquid disinfectants should be sprayed on or with[illegible] by wire brushes.

4. Powdered naphthaline which is more effective than naphthalene balls, should be used as a repellent.

OBITUARY

We regret to record the following deaths which have occurred since our last issue and we extend our deepest sympathy to the relatives:—

Surgeon Rear-Admiral Ernest James Finch C M G (Ret.) who died on December 2, 1934, was born in 1868. He received his medical education at St. Mary's Hospital, London, from which school he obtained the qualifications of M.R.C.S. Eng., L.R.C.P. Lond., and L.S.A. Lond. in 1891. He joined the medical branch of the Royal Navy immediately after qualification and was appointed for a course of instruction at R.N. Hospital, Haslar. In December 1891 he was appointed to H.M.S. *Sapphire* and on service in H.M.S. *Edinburgh* (Mediterranean Station) and in H.M.S. *Alecto* (West African Station), employed in which until May 1895, when he was appointed to R.N. Hospital, Plymouth. He held this appointment until December 1896, when he returned to service in the Mediterranean in H.M.S. *Hibernia*. During this period he was promoted to Staff Surgeon (1899). His next appointments were to H.M.S. *Defiance* and *Apollo* and in 1900 to H.M. Dockyard, Rosyth, before he joined the Army and energy to study and obtained the degree of M.D. Durham, which he obtained with distinction and honours in 1901. His next appointments were to H.M.S. *Hecla* (Chile) H.M.S. *Ocean* (in which ship he was promoted to the rank of Fleet Surgeon) H.M.S. *Pigmy* and H.M.S. *Black Prince*. This service took him to October 1911, when he was appointed to the Royal Naval Recruiting Head-quarters.

In August 1914 he joined the Royal Marine Barracks at Chatham and in September of the same year was attached to the Royal Navy Division, of which the Royal Marines were the nucleus. He served with the 2nd Brigade at Antwerp and the Gallipoli peninsula, where he succeeded Surgeon Vice-Admiral Sir Arthur Gould Lee (then Surgeon Commander) as A.D.M.S. of the Division, and in France.

In November 1917 he returned to sea and served in H.M.S. *Tiger* and 1st May 1919 when he again joined the Royal Marines this time at Portsmouth, where he remained until his promotion to Surgeon Captain in June 1920. His final appointment was to R.N. Barracks at Portsmouth. On October 1 1923 he was promoted to Surgeon Rear-Admiral and retired at his own request on October 2 1923.

During his career Surgeon Rear-Admiral Finch took part in the Benin Expedition in 1897 for which he received the West African Medal with the Benin Clasp. During the Great War he was twice mentioned in despatches for his services with the Royal Naval Division at Antwerp and on the Gallipoli peninsula and in September 1918 he received the honour of C.M.G. from His Majesty the King.

Surgeon Vice-Admiral Sir Arthur Gould Lee [illegible] Finch was an ideal Principal Medical Officer, beloved by all for his charity and his nobleness evidenced in many dangerous and trying circumstances. I frequently recall one particular occasion when he was good enough to be my guest in Gallipoli with as genial and fun-loving a host as ever was blown to fragments by a Turkish shell. I went to see if he was all right and to hand him ready with one of his whimsical remarks on the humorous side of the Turkish outlook upon war when he had a headache! Dear good-hearted Finch with his quiet humour was always ready to sacrifice himself for his messmates and his patients.

The Royal Navy mourns the loss of a very gallant, able and popular medical officer.

Surgeon Captain Roderick Joseph Graham Parnell (Ret.), who died on February 5 1936 was born on September 5, 1883. He received his medical qualification at Royal University and at King's College, London, and obtained the qualifications of M.R.C.S. Eng., L.R.C.P. Lond. in 1906. After holding the appointment as House Surgeon at King's College Hospital he joined the medical branch of the Royal Navy in November 1909 and was appointed to R.N. Hospital Haslar, for the usual course of instruction. At the conclusion of this course Parnell was awarded the prizes in Hygiene and Naval Hygiene and also the Gold Medal for general efficiency. In September 1910 he was appointed to s.s. *Balmoral Castle* for the Duke of Connaught's tour. Two years' service in H.M.S. *Highflyer* in the East Indies station followed at the conclusion of which he was appointed to R.N. Hospital Chatham for the instruction of the Sick Berth Staff. He held this appointment from August 1913 until the outbreak of war in August 1914 when he joined H.M.S. *Irresistible*. His war service continued in H.M.S. *Ark Royal* (for Tenedos manœuvres), R.N. Hospital Malta and H.M.S. *Hussar*, until October 1916 when he was appointed to R.N. Hospital Haslar where he remained until January 1920. From this date until he retired again to R.N. Hospital in February 1933 he served in H.M. Ships *Emperor of India*, *Iron Duke* and at R.N. Barracks, Portsmouth. Following upon his second period at R.N. Hospital Haslar he spent two years on the Mediterranean station in H.M. Ships *Queen Elizabeth*, *Worcester* and *Benbow*.

In August 1927 he was appointed to R.N. Hospital Chatham but as a result of ill health was unable to take up this appointment and after a period of sickness he was appointed to the Medical Department of the Admiralty as Assistant to the Medical Director General of the Navy. On September 5, 1928 he was placed on the retired list (under the age clause) with the rank of Surgeon Captain, but returned however, to hold his appointment as Assistant to the Medical Director General until February 28, 1934 when he relinquished it at his own request.

In addition to obtaining the Gold Medal and the Prize in Hygiene and Naval Hygiene during his early days at R.N. Hospital Haslar, Parnell throughout his service in other ways. He served on the Admiralty Board of the National Council for Combating Venereal Diseases, and he wrote many articles in connection with the venereal branch of surgery, including that on Venereal Disease in the Naval Medical History of the Great War. He assisted in judging of the finals for the Stanley Shield Competition for the British Red Cross Society on several occasions and in June 1931 he was appointed Officer of the Venerable Order of the Hospital of St. John of Jerusalem. Surgeon Captain H. D. K. Stephens writes of him:—

"The deepest confidence of the Medical Branch Parnell came as a severe blow to his many friends in every branch of the Service. That such an event should happen so early in his retirement from the active list makes his loss increasingly hard.

"He worked hard at his special subject in which he became a recognized authority. To listen to him lecture on some such subject as ophthalmia or interstitial hepatitis revealed a depth of knowledge extremely rare. As a practical surgeon his skill with the knife and unerring temperamental did not help him to shoulder the rough and heavy responsibilities to be met in the operating theatre on the ward. The odds in these respects he left were always a shade against him. Nevertheless, possessing an excellent pair of hands, his manual dexterity refreshed the nature of the artist in the neatness and beauty of his surgical technique. Always ready and eager to help in any emergency he proved himself a brilliant assistant.

"To those who knew him well he was a charming and delightful companion. In the Wardroom he was the life and soul of the party, a most popular Officer with every one both senior and junior. A quick thinker with a ready wit he could always be relied upon to take a full share in any social function.

"To his intimate friends Roddy was one staunch and loyal, upright and honest to all his dealings. Those of us who shared the privilege of his friendship will always remember him as a very human and lovable character."

Surgeon Captain Harold Fabet Jones who died on January 1 1936 was born in 1870 and obtained the medical qualification one of L.R.C.P. and S. Ireland in 1891. After a short period in civil life, he joined the Royal Navy in November 1894 and was appointed to R.N. Hospital Haslar from which he in March 1895, he joined H.M.S. *Scorpion*. He appears to have spent a considerable period of time at sea before leaving *Scorpion* in November 1895 he served in succession in H.M. Ships *Alexandra*, *Grafton* (China Station), *Wildfire*, *Londonderry* (Mediterranean) in which ship he was promoted to Staff Surgeon. *Humber*, *Atlantic Fleet*, *Topaze*, in 1908, when he was further promoted to Fleet Surgeon. *Fisgard*, *Formidable* and *Conqueror*.

In March 1914 he was appointed in charge at R.N. Sick Quarters at Queenstown where he remained until April 1916. He then joined H.M.S. *Royal Oak* in which ship he served at the battle of Jutland. He was mentioned in despatches following this action and received Their Lordships' commendation for his services. In August, 1919 he was appointed to H.M. Dockyard Bermuda where he remained until December 1921 when he joined R.N. Barracks, Portsmouth where he remained to serve until his retirement on the age clause and with the rank of Surgeon Captain on March 13, 1922.

DEATH.—INSPECTOR-GENERAL GEORGE DARRAH TWIGG (Ret.) who died on December 16 1934 was born in 1854 and after obtaining the qualifications of L.R.C.S.Ed. in 1876 and L.R.C.P.Lond. in 1876 joined the Royal Navy on February 1877. After the usual course of instruction in Naval Medicine at R.N. Hospital Haslar he departed for the East Indian Station where he served until 1882 in H.M. Ships *Undaunted* and *Euphrates* and in 1882 he served in Egypt during the Arabi Pasha rebellion. He was present at the bombardment of Alexandria on July 11th and was awarded the Egypt Medal and Khedive's Star. Subsequent service followed first in the Mediterranean for his record shows service in H.M. Ships *Express* and *Grappler* from October 1879 to May 1882. After short periods of service in H.M.S. *Indus* and with the Royal Marines at Chatham he was appointed to H.M. Dockyard, Chatham, in September 1882, where he remained until 1884. Whilst holding this appointment he studied for and obtained the qualifications of L.R.C.S.Edin. He next served continuously abroad except for seven months in H.M.S. *Impregnable*, in which ship he was promoted to Staff Surgeon, on the North American and West Indian Station, in the Mediterranean and Australian waters until August 1893. On his return home he was appointed to H.M.S. *Thunderer* where he remained for two years and during which time he was promoted to Fleet Surgeon. Further foreign service followed for he served again on the North American and West Indian Station and continued his foreign service for three years on the South East coast of America in H.M.S. *Fiona*. On his return he saw more sea life in H.M. Ships *Latona* and *Rainbow* until April 1902 when he was appointed to H.M. Dockyard, Portsmouth. He was placed on the retired list at his own request with the rank of Deputy Inspector-General on 1st January, 1908.

FLEET SURGEON ALFRED CROPLEY (Ret.) who died on February 3 1935 was born in March 1862 and, after obtaining the qualifications of L.S.A. Lond. 1884 and M.R.C.S. Eng. 1885, joined the Royal Navy. Following his course of instruction at the R.N. Hospital Haslar he spent five years at sea, serving in succession in H.M. Ships *Hector*, *Northumberland*, *Calliope* (China and Australia) and *Amethyst*. In 1890 he obtained the Diploma in Public Health R.C.P. & S. Eng. His next record as appointed to the R.N. Hospital Jamaica where he remained for three years. On his return he served for a short period in H.M.S. *Excellent* and then departed for five years service in H.M.S. *Ophir* on the China station. During this commission in 1897 he was promoted to Staff Surgeon. He returned home in 1900 and served until 1903 in H.M. Ships *Trafalgar* and *St. George* and while in the latter ship received the rank of Fleet Surgeon. In 1903 he took up his last appointment at R.N. Engineering College, Keyham and in April 1905 was placed on the retired list at his own request.

FLEET SURGEON JOHN JENKINS (Ret.) who died on February 4 1935 was born in 1860. He obtained the qualifications of M.R.C.S. Eng. and L.S.A. Lond. in 1884 and shortly afterwards joined the Royal Navy. He was appointed to R.N. Hospital, Haslar in February, 1885 after which he spent three years at sea in H.M. Ships *Defiance*, *Impregnable* and *Curlew*. In 1888 he was appointed to the Royal Marines at Walmer where he remained for nearly four years. He next served in H.M.S. *Sparrow* on the Cape and West African Station returning home in 1894. After short periods of service in H.M.S. *Impregnable* and H.M.S. *Galatea* he again joined the Royal Marines at Plymouth where he remained until July 1896. In 1897 when serving in H.M.S. *Calliope* he was promoted to Staff Surgeon and his further steps in rank to Fleet Surgeon was obtained four years later while ship was serving in H.M.S. *Indefatigable*. From this time he appears to have spent the remainder of his Service time at sea for his record shows appointments to H.M. Ships *Andromache* Cocos (Mediterranean) *St. Vincent*, *Royal Cumberland*, *Hood* (again) and finally *Revictualling* from which ship after two years service in her he was placed on the retired list at his own request in May 1909.

FLEET SURGEON JOSEPH REVILLE MCDONNELL (Ret.) who died on December 26 1934 was born in 1859. After he had obtained the degrees of M.D. Queen's University (Ire.) in 1881 and M.Ch. Royal University of Ireland in 1883 he joined the Royal Navy in August, 1884 following his course of instruction at R.N. Hospital Haslar he was appointed to H.M.S. *Scorpion* in April, 1885. He continued to serve at sea in H.M. Ships *Heroine* and *Inflexible* until February 1886 when he was appointed to R.N. Hospital Plymouth. His term in that hospital lasted for just over a year and after a short period in H.M.S. *Impregnable* he returned to the sea where he appears to have spent the remainder of his Service career. His record shows services in H.M.S. *Cockatrice*, at Gibraltar, H.M. Ships *Bluebell* and *Barrosa* on the Cape and West Coast Station and H.M.S. *Cossack* in the Mediterranean besides service in ships at home. His last appointment was to H.M.S. *Actaeon* in November 1903 from which ship he retired at his own request in February 1904. In July 1897 while he was serving in H.M.S. *Barrosa*, he received favourable report for his good service during the Benin Expedition.

These last four officers have duties which are only a necessity to other than the escort corvette and to all, their Homes and their ships are only History and they in their day did their part and assisted in the building of our Service.

RETIREMENTS

[illegible] Commander (D) M I Hopson placed on [illegible]
[illegible] ber (D) December 7th 1934
[illegible] der (D) L F Tame withdrew January [illegible]
[illegible] Commander (D) R S Ward L D S placed [illegible]
[illegible] Commander (D) January 14 1935
Surgeon [illegible] R Thom M D C B resigned January 1 1935
Surgeon [illegible] C F Dicks M R C S L R C P resigned February 28 1935

PROMOTIONS

Surgeon [illegible] F Walsh M B Ch B to be Surgeon Lieutenant-Commander January 18 1935

Surgeon Lieutenant H A Clark M R C S L R C P L D S to be Surgeon Lieutenant-Commander February 18 1935

APPOINTMENTS

December

Surgeon Captains J G Dawson M D Ch B M R C P to R N Barracks Portsmouth [illegible] Special Q B E M R C S L R C P to R M Infirmary Deal G R McCowen O B E M D C M to *Nelson* (on board MO on staff of C in C) and as Specialist to Hygiene (accompanied [illegible] *Iron Duke*)

Surgeon Commanders N B de M Cranswell M H C S L R C P to R N Barracks Portsmouth A B Clark M B B S to R N Hospital Greenwich (and as assistant to Professor [illegible] ology) temporarily

Surgeon Lieutenant Commander (D) A T Dully L D S to R N Hospital Plymouth

January

Surgeon Commanders G E D Ellis O B E M R C S L R C P to *Tiger* E F [illegible] R T [illegible] & S to R N Cadets Sick Quarters Dartmouth K A I Mackenzie M B R C I M R C S L R C P to *Resolution* L S Coss O B E L M S S A to R M I Forest Hly mouth L I Stringwell M B B S M R C S L R C P to R N Barracks Chatham (and as Ophthalmic Specialist) E Moxon *Brazen* M R C S L R C P to R M [illegible] Portsmouth F St B Wickham O B E M R C S L R C P to *St Vincent* A M Im M B Ch B to H M Dockyard Sheerness

Surgeon Lieutenant-Commander W V Beach M R C S L R C P to *Dragon* T F [illegible] to *Excellent* (on completion) and as I M O [illegible] Coast M R C S L R C P to R N Hospital Malta (and as Medical Specialist) H E Parker M B B Ch F R C S Ed to R N Hospital Plymouth (and as E N T Specialist) D H Kennedy M B Ch B to R N Sick Quarters Shotley and as E N T Specialist) J B N Gholson M B to *Hastings* A D Sinclair M B to

Surgeon Lieutenant-Commander (D) D C I [illegible] M C L D S to [illegible]

Surgeon Lieutenant P S Walker Taylor M B B S F R A C S to *Carlisle* (to be supernumerary) R N Hospital Simonstown) W W Stricklin M R C S L R C P to *Courageous* I H Hall M B I Ch to *Berham* J L Davenport M R C S L R C P to *Falmouth* A F Fenton I D C P & S to *Harebell* A J Glezebrook M R C S L R C P to *Excellent* [illegible] ottingay Dan C I D C I & S to R N Hospital, Plymouth (and as G U Specialist) D F Will M B B Ch to *Pr Esther* I K Fraser M B Ch B to *Hood* R F Stenhouse M B I B to *Wellington*

Surgeon Lieutenants (D) A W V Price L D S to R N Barracks Chatham

Surgeon Lieutenant (D) R S Jeskins L D S and W J Walters L D S to R N Barracks Devonport

February

Surgeon Commanders A C Paterson M R C S L R C P to R N Barracks Devonport [illegible] A School and as Specialist in Abdominal Diseases) H H Pablington L R C P & S R N Barracks Chatham A W McRorie M B, B Ch Instr to New Zealand Division

Surgeon Lieutenant Commanders J G Ingoldsby M B B Ch to R N Sick Quarters Shotley R C Beattie M H B Ch to R N Hospital Bermuda (and as specialist in Roentgenology) A V Pumphrey M B Ch B D D O M S to R N Hospital Haslar (and as ophthalmic specialist) J J R Weeks M R Ch B to R N Hospital Malta (and as ophthalmic specialist) G D J Bell M B Ch B to *Manxe* (and as ophthalmic specialist)

Surgeon Lieutenant Commander (D) G [illegible] F Reese L D S to Hawkins 12

Surgeon Lieutenants W A S Grant MB ChB to [illegible] M Nisbet F Ch
t *Sandpiper*; H L Rohan MRCS LRCP, to [illegible] W Rhys MRCS
LRCP to *Penelope*; D P Gurd MB ChB to Co[illegible]well Sandon MB
BCh MRCS LRCP; R F H to *Spider* S K Fenton M[illegible] B MRCS LRCP
to *Harrier*; W A Clark MRCS LRCP to RN Barracks Ply[illegible]mouth and ex-phthalmia
specialist; P M McSwiney MB ChB, to *Suffolk*; J [illegible] Smith MB BCh MRCS
LRCP, to *Cycla*

MARCH

Surgeon Captain G D G Ferguson MRCS LRCP to RN Hospital Hong Kong
Surgeon Commanders G G Norman MHCS LRCP to *Vindictive* R W Musson MB
ChB to RN Hospital Haslar (and to specialise in haematology) J A O'Flynn MD BCh
D I M and H L *Kent* (and as P MO)

Surgeon Lieutenant Commanders (D) I J Wood LDS to RN Hospital Haslar A
Macpherson LDS to *Gurnes* A Lowrie ORF LDS to RN Barracks Devonport
I R Longhurst LDS to *St Vincent* F W Watt LDS to *Invincible* I R Armstrong
LDS to *Achilles* C Fahai to *Drovetre*

Surgeon Lieutenants J W Oliver MRCS LRCP to RM Infirmary Chatham N J
Holding LRCP and S to *Rinaldo*

Surgeon Lieutenants (D) F I Ferris LDS to RN Barracks Chatham K E J
Fletcher LDS and A C Heine LDS to RN Barracks Portsmouth

ENTRIES

Messrs F L Ferris LDS R I T Hatch LDS and A C Heine LDS
BDS (NZ) entered as Acting Surgeon Lieutenants (D) on probation for 6 months and
appointed to RN Hospital Haslar (for courses of instruction) January 15 1935

PHARMACISTS

Mr F W Hooper MBE—Head Pharmacist and Technical Adviser to the Medical
Director General of the Navy—superannuated—February 1935

Mr J F S Bowers—Superintending Pharmacist—appointed to Naval Medical Dept at Royal
Victoria and Dockyard Pembroke 20 Feb and as Head Pharmacist and Technical Assistant
to the Medical Director General of the Navy February 28 1935

Mr R A Snow—Senior Pharmacist—appointed to RN Hospital Plymouth and to be
Superintending Pharmacist February 28 1935

Mr S Mitchell—Pharmacist—appointed to RN Hospital Haslar and to be Senior
Pharmacist February 28 1935

WARDMASTERS

PROMOTION

Warrant Wardmaster H D Elliott confirmed in rank dated December 1 1933

ROYAL NAVAL VOLUNTEER REVERSE

ENTRIES

Mr A H Concanen MB ChB MRCS LRCP entered as Probationary Surgeon
Lieutenant, Lond I Mersey Division (Outlying Unit RMS *Amrath* at Birkenhead) January 8
1935

Mr N A Vernon MRCS LRCP entered as Probationary Surgeon Lieutenant Lond III
London Division February 6 1935

Mr W C Gill MB FCh FRCS LRCP entered as Probationary Surgeon Lieu-
tenant Lond II London Division February 11 1935

Mr R W G Lancashire MRCS LRCP entered as Probationary Surgeon Lieutenant
Lond I Mersey Division (Headquarters) February 13 1935

Mr J A Shepherd entered as Probationary Surgeon Sub-Lieutenant Lond II Scottish
Division December 3 1934

Mr P deBec Turtle BA entered as Probationary Surgeon Sub Lieutenant Lond II London
Division December 4 1934

Mr R T May entered as Probationary Surgeon Sub Lieutenant Lond II London Division
December 20 1934

Mr F S Laffman entered as Probationary Surgeon Sub Lieutenant Lond II London
Division December 20 1934

Mr C F Nicholas entered as Probationary Surgeon Sub Lieutenant Lond II Scottish
Division December 27 1934

Mr D S Mespbal, entered as Probationary Surg on Sub Lieutenant List 11 London Division January 1 1935

Mr L Foster entered as Probationary Surgeon Sub Lieutenant List 11 London Division January 10 1935

Mr J K Sargentson B A entered as Probationary Surgeon Sub Lieutenant List 11 London Division January 10, 1935

Mr J S Anderson entered as Probationary Surgeon Sub Lieutenant List 11 Mersey Division January 19 1935

Mr W E Parker entered as Probationary Surgeon Sub-Lieutenant List 11 Mersey Division January 19 1935

Mr R A Wigg entered as Probationary Surgeon Sub Lieutenant List 11 Severn Division January 21 1935

Mr G S Irvine entered as Probationary Surgeon Sub-Lieutenant List 11, London Division January 6 1935

Mr E K Fraser entered as Probationary Surgeon Sub-Lieutenant List 11 London Division February 6 1935

APPOINTMENTS

Surgeon Captain R F Willan M V O O B E, V D M B F R C S M S R N V R (Rtd) Appointed Professor of Surgery University of Durham College of Medicine

JANUARY

Probationary Surgeon Lieutenant (D) L B Hilton L D S to Vernon J Dunvan to R N Hospital Chatham

Probationary Surgeon Sub Lieutenant R V Jupes to *Rodney*

FEBRUARY

Surgeon Commander J Lathan, V D M B E transferred from List 11 E Scottish Division to List 11 London Division

Surgeon Lieutenant H L Hoffman to R N Hospital Haslar

Probationary Surgeon Lieutenant F G Burgess M R C S L R C P to *Hood*

MARCH

Surgeon Lieutenant-Commander F J Puddy to R N Hospital Haslar

PROMOTIONS

Surgeon Lieutenant F G Evans M R C S L R C P to be Surgeon Lieutenant Commander December 18 1934

Surgeon Lieutenant R Tadlow, M D Ch B B A O D P H to be Surgeon Lieutenant Commander May 11 1935

Surgeon Lieutenant J D Simpson M B B Ch M R C P to be Surgeon Lieutenant Commander February 1 1935

Surgeon Sub Lieutenant B R Alderson, L R C P & S to be Surgeon Lieutenant June 1 1934

Probationary Surgeon Lieutenant (D) L F Hilton L D S confirmed as Surgeon Lieutenant (D) March 24 1935

Probationary Surgeon Sub Lieutenant P M Inman confirmed as Surgeon Sub Lieutenant February 19 1935

RETIREMENTS AND RESIGNATIONS

Surgeon Lieutenant W T Donnan M B Ch B removed from List January 16 1935

Surgeon Lieutenants A J W Beard and W S McKenzie L R C P resigned January 16 1935

Surgeon Lieutenant I J Dwyer M B Ch B resigned, January 24 1935

Surgeon Lieutenant R P Davies resigned January 24 1935

Surgeon Lieutenant D V Williams resigned January 24th 1935

QUEEN ALEXANDRA'S ROYAL NAVAL NURSING SERVICE

PROMOTIONS

Superintending Sister Miss L Phillips A R R C to be Head Sister February 20 1935

Nursing Sister Miss F Edmonds to be Superintending Sister February 20, 1935

RETIREMENTS AND RESIGNATIONS

Head Sister Miss M Clark R R C superannuated February 16 1935

Nursing Sister Miss M B Norcott resigned January 20 1935

Nursing Sister Miss S M St J James resigned, February 17 1935

Nursing Sister Miss C Reid Smith resigned February 22 1935

[illegible]

[illegible] obtained [illegible] Diploma [illegible]
Miss [illegible] Ladybird [illegible] Nursing [illegible] [illegible]
Miss [illegible] [illegible] [illegible] [illegible] [illegible]
Miss [illegible] [illegible] [illegible] [illegible] to probation, 1935
Miss [illegible] [illegible] [illegible] [illegible] [illegible] balance, March [illegible]

[illegible]

Lady Superintendent [illegible] [illegible] [illegible] [illegible] Nursing Service Board
Head Sister Miss [illegible] R.R.C. [illegible] [illegible] Plymouth February [illegible]
Superintending Sister Miss [illegible] R.N. [illegible] Malta February 20 [illegible]
Nursing Sister Miss K. [illegible] R.N. [illegible] Plymouth December 28 1934
Nursing Sister Miss [illegible] R.N. [illegible] Hospital Chatham February [illegible]
Nursing Sister Miss [illegible] R.N. [illegible] Hospital Chatham February 24 1935
Nursing Sister Miss [illegible] R.N. Hospital Chatham March 1 [illegible]
Nursing Sister Miss M. [illegible] R.N. Hospital Malta March 8 1935

JOURNAL OF THE ROYAL NAVAL MEDICAL SERVICE

Balance Sheet, 1934

Assets	£	s	d	Liabilities	£	s	d
Balance at bank Dec. 31 1933	136	7	5	Balance Credited	548		
£100 Conversion Loan 4½ per cent	100	0	0				
£200 War Bonds 5½ per cent	200	0	0				
£100 War Stock 5½ per cent	100	0	0				
Subscriptions owing 1934	12	0	0				
	£548	7	5		£548	7	5

I have examined the Receipts and Payments Account with the Books and Vouchers and find the same to be in accordance therewith. All my requirements as Auditor have been met.

CECIL A. WARD
Paymaster Captain

H. E. SYMS
Surgeon Captain } *Joint Editors*
J. H. BURDETT
Surgeon Captain }

NAVAL MEDICAL COMPASSIONATE FUND

At the Quarterly Meeting of the Fund held on January 25 two cases were considered and £100 voted to the applicants. The following is a summary of the cases relieved:—

Daughter aged 69 of a Surgeon who died in 1870. Lives with her sister aged 71 in a tiny flat and has no income apart from gifts from Charitable Funds. Voted £20. Total amount received from this Fund at various awards £145 10s.

Sons aged 60 and 59 of a Fleet Surgeon who died in 1919. Owing to arrested mental development they have never been able to earn any living and their combined income is insufficient to cover the cost of their maintenance. Voted £30 jointly. Total amount received from this Fund at various awards £1 099.

NAVAL MEDICAL COMPASSIONATE FUND

Account of Receipts and Payments for the year ending December 31, 1934

	£ s d	£ s d
[illegible]nt Bank on January 1 1934		
[illegible] Account	130 5 7	
[illegible] Account	102 1 2	
		232 6 9
Investments—Transferred £400 2½ per cent Consolidated Stock	265 0 0	
Interest on 3½ per cent. Consolidated Stock	66 10 0	
Interest on 4 per cent. Consolidated Stock	85 0 5	
Interest on 3½ per cent War Loan	10 10 0	
		375 0 4
Donations		9 16 0
Interest on Deposit Account		10 0
Subscriptions—		
Year 1932	1 1 0	
1933	3 3 0	
1934	229 19 0	
1935	4 4 0	
	238 7 0	
	£849 19 1	

	£ s d	£ s d
Awards to Orphans and Widows		60 0
Secretary's Allowance		20 0
Auditor's Fee		1 1
Refund of cost of Railway Warrant to a Delegate appointed to attend the Annual General Meeting		6 11
Stationery		1 10 0
Balance at Bank on December 31 1934		
Current Account	410 10 0	
Deposit Account	102 11 2	
	513 1 2	
	£849 19 1	

I certify that I have examined this Account and found it to be correct and I find that all the requirements as Auditor have been met.

Three Subscriptions for 1932 four for 1933 and eleven for 1934 are outstanding at December 31 1934.

(Sd.) C. V. HONEYSETT
Auditor

Treasury and Audit Department
January 22 1935

In addition to the above Cash Balances, Stocks to the following amounts were standing at the close of the accounts at the Bank of England in the name of the Trustees viz.

*	£10 600	2½ per cent Consolidated Stock
	£800	3½ per cent War Stock
†	£1,900	3½ per cent. Conversion Stock
	£825 10s 4d	4 per cent Consolidated Stock

Original Fund under Clause 5 of the Order in Council July 8 1915
† The remainder transferred to Consolidated Stock and Subscriptions

(Sd.) GUY L. BUCKERIDGE
Surgeon Rear Admiral
Honorary Treasurer
January 1 1935

Preparations, &c.

Burroughs Wellcome and Co, Snow Hill Buildings London E C 1 inform us that they have issued 'Hypoloid' Calcium Lævulate in ampoules of 1 gram This product has been introduced to meet the demand for a calcium product for injection in cases where calcium therapy is indicated It contains 14 8 per cent of calcium and is non toxic in therapeutic doses

'Hypoloid' Calcium Lævulate is indicated in the treatment of tetany, in the vomiting of intestinal obstruction in cardiac rickets and as a pre operative measure in various surgical operations

It is issued in boxes of 5 "Hypoloid" ampoules

Also that 'Wellcome' Beard Diphtheria Prophylactic Alum Precipitated Toxoid (A P T) of high immunizing efficiency made at The Wellcome Physiological Laboratories is now available commercially and is issued by Burroughs Wellcome and Co in germ proof containers of 1 c c and 5 c c

The discovery that Alum Precipitated Toxoid (A P T) given in one dose was a prophylactic of extraordinarily high immunizing power in animals, was made in The Wellcome Physiological Research Laboratories in 1926 its use in human preventive medicine was referred to in 1931 Since that date, the high immunizing efficiency in human beings has been established, but progress has been cautiously slow because of the risk of causing tissue response at the site of injection, this though medically trivial may disturb parents The efficiency of A P T probably depends on the deposition of the relatively insoluble aluminium toxoid body at the site of injection From this the immunizing toxoid is gradually liberated The complex toxoid body however excites a tissue response, causing a small painless nodule The tissue response is probably an essential factor in the excellent immunization which occurs

Experiments as yet unpublished made in The Wellcome Physiological Research Laboratories, have shown that in animals two spaced injections of one tenth or less, of the ordinary human dose will give more rapid or higher immunity than one single dose It is possible that a similar method may prove useful in human immunization the choice of troublesome local tissue response being much less by this method

Notices.

The Editors invite Medical Officers to send in Original Papers on professional subjects travel personal experiences &c Items of news and matters of interest to the Naval Medical Service will be welcomed from ships and establishments on home and foreign stations

All Articles or Communications published in the Journal of the Royal Naval Medical Service will become the property of the Journal with full copyright powers, unless the author declares when sending the Article that he desires to reserve the copyright to himself

Notices of Births Marriages and Deaths are inserted free of charge to subscribers

All Communications should reach the Editors on or before the 1st of the month preceding the date of issue Unless clearly written, they should be typed in order to avoid mistakes and they should be addressed to the Editors, Journal of the Royal Naval Medical Service Royal Naval Hospital, Haslar Gosport

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Editorial.

We have some items of interest to which we would draw the attention of our readers.

Early in this year we received a letter from a Medical Officer in which he enclosed a subscription to the Naval Medical Compassionate Fund. He stated in this letter: "I have never yet seen the names of the treasurer or committee or its official address in print. Neither have I ever been directly approached by anybody for a subscription or with a proposal of membership. The same probably applies to many of the younger members of our branch."

We regret that such should be the case for we have endeavoured to call the attention of medical officers to this fund of ours in the editorial articles published in our issues of January, 1934 and 1935; in the former too we referred readers to the advertisement pages of the Navy List. At the Naval Medical Dinner held in London on April 26 1935, the Medical Director-General gave the number of subscriptions to the Naval Medical Compassionate Fund from the medical officers on the active list as approximately one third of the serving officers.

We have previously pointed out that we have two important items only which are entirely the affair of our branch, these are:—The Naval Medical Compassionate Fund (address: The Honorary Secretary Naval Medical Compassionate Fund, Medical Department of the Navy, Admiralty, S.W.1), and the JOURNAL OF THE ROYAL NAVAL MEDICAL SERVICE. We cannot deny experiencing the feeling, expressed concisely by the quotation: "He that is not with us is against us."

Our second item is to record as we do in detail elsewhere in this issue the success of the Naval Medical Dinner this year. The numbers present exceeded those of the previous year. The Medical Director-General was the sole speaker and he followed precedent by giving a résumé of the news of our branch and an indication of plans which are still in the melting pot.

We also report, in this issue an assembly at R N Hospital, Haslar, on April 30 the occasion being the retirement of Surgeon Rear-Admiral W W Keir C M G from his office as Medical Officer in Charge of the Hospital, and indeed his retirement from active service It may seem invidious to report this and not to report similar events from our other hospitals and establishments, but there are three reasons for our doing so The first of which is that the Editorial eyes and ears were present the second, that we do not remember having seen or heard of such a comprehensive gathering of medical officers, other than at the Navy Medical Dinner, before—even our medical meetings at Haslar are not so well attended Finally we want to record that happy expression made by Surgeon Captain Dawson, who, speaking for the Medical Officers of the Ships and Establishments of the Port, said, 'We consider ourselves as extra-mural members of the Royal Naval Hospital'

Original Articles

UNDULANT FEVER WITH SPECIAL REFERENCE TO CASES SEEN IN MALTA

By Surgeon Commander S G Rainsford M D R N

(*Continued from p* 105)

SECTION III

Diagnosis—

(*a*) Clinical
(*b*) Differential
(*c*) Laboratory

Prognosis.

Diagnosis

While it is true that the diagnosis of undulant fever almost entirely depends on the laboratory findings, it is also true that unless the physician learns to suspect undulant fever, from the presence of certain clinical signs and symptoms, much valuable time may be lost before any material reaches the laboratory for investigation, also, a very large number of cases of a mild nature may be missed altogether and will eventually return to work after their illness has been labelled catarrh influenza, or, perhaps more truthfully, P U O It will be seen from the comparative table of symptoms and signs that the most pronounced of these which are common to all three types of *Brucella* infection, are weakness, sweating, chilliness, especially in the evening headache, fever and leucopenia. Hardy [15], states that in 73 per cent of his cases anorexia formed one of the symptoms It has already been stated that amongst the Malta cases real anorexia was uncommon Patients were not keen on their food when the temperature was high and for this reason fairly frequently refused their evening meal,

but were nearly always quite ready to eat a good breakfast next morning. True anorexia was only a real symptom in the severest of cases, in the majority of whom the temperature was intermittent rather than undulatory. I think that here lies the explanation as to why anorexia and loss of weight were so much more uncommon in the *melitensis* than the bovine and porcine infections, for in the latter the temperature in most cases is intermittent. The remissions in the undulatory type of pyrexia give the patient intervals of time during which the appetite improves, and loss of weight or severe wasting is consequently rare. It is significant that Hardy himself states that this anorexia varied greatly with the temperature and was frequently absent in the mornings. It is possible that he judged his cases by a different standard and included in his percentage of cases showing anorexia, cases which have not been included in the corresponding figures for my Malta cases. It will be seen therefore that the figures in the comparative table of signs and symptoms are in fairly close agreement for the Iowa and Malta cases with the exception of general aching body pains pain in the back of the neck, pain in the joints and insomnia all of which were higher for the Malta cases. In fact, pain in the back of neck is so often present in the Mediterranean type of fever that it is one of the most helpful of symptoms to the diagnostician since it is comparatively rarely present in the other commoner fevers of this part of the world.

I have already quoted Hardy's statement that rigors more commonly occur in bovine and porcine than in caprine infections. I do not entirely agree with this for, in my own experience, rigors were as common as they would seem to have been amongst Hardy's cases.

The variety of organism causing the infection, whether it is a *Br. abortus* bovine or porcine or *Br. melitensis*, has a certain very definite bearing on the clinical form of the disease produced. This has to be borne in mind by the investigating physician and it is for this reason that a careful history should be taken not only with regard to contact with livestock and use of raw dairy products, but also with special regard to the species of animal concerned—it should be remembered that animals other than the cow goat or pig have been found to be infected with *Br. abortus*. Titch [15] reported the isolation of *Br. abortus* bovine from certain suppurative lesions in horses. Dogs carry a variety of *Brucella* which is peculiar to canines, *Brucella bronchisepticus*. In the future, no doubt, numerous other animals will be found to carry different varieties of *Brucella* some of which may be found to be pathogenic to man, but unless the animal carrying the virulent strain is one which is employed for domestic purposes such a discovery will be of academic rather than of practical importance. For reasons already stated it may be helpful to the diagnostician to ascertain what district or part of the world the patient has recently resided in and to have some rough idea of the incidence of undulant fever in these various regions. It is necessary for me to repeat that I can only write

with experience of the Mediterranean type of case. The following remarks concerning diagnosis consequently deal chiefly with the problem as it has to be faced in Malta and the Mediterranean. After reading Hardy's [15] very complete account of undulant fever in Iowa, it would seem that, providing certain pronounced differences are kept in mind, such as the character of the fever &c., it is very much the same problem in any part of the world. In Malta with the exception of the characteristic type of pyrexia there would seem to be nothing definite in the way of a clinical sign or symptom to lead one to a diagnosis of undulant fever. Hardy says that undulant fever is an infection having neither pathognomonic symptom nor sign. In my opinion there is one combination of signs which, I have suggested might be described as an "undulant fever syndrome." These are (1) high fever without any constitutional symptoms except perhaps a feeling of weakness, (2) a moist skin and therefore little or no sense of feverishness, the moistness of the skin when the temperature is high appears to be almost uncanny, (3) lack of apparent signs of prostration and the apparent alertness and mental vigour displayed by patients who have perhaps been running a temperature of 103° or 104° F. for some days, all of which are in striking contrast to any other disease produced by infection, (4) the extremely slow debilitating effect of this fever is one of its pronounced features and should be included as part and parcel of the syndrome. I have seen patients who have been in bed with continuous fever for perhaps six or eight weeks, who were still cheerful and could sit up in bed, read the paper discuss local topics with their next door neighbours and also eat a good meal. Compare this attitude with that of a patient suffering from typhoid fever and the remarkable nature of this disease will be realized. I know of no other fever in which such a peculiar combination of signs and symptoms as these occur and this, taken together with a lack of true physical signs to account for the fever is, in my opinion, the most valuable means we possess for the clinical diagnosis of undulant fever.

Hardy states that, amongst his cases, there was often a wide discrepancy between the degree of fever registered by the thermometer and the patient's sense of feverishness. He goes on to state that, 'probably no one thing should so influence the physician to consider *Brucella* infection in the differential diagnosis as a fever unexplained by physical signs.' If we exclude what I have described as an 'undulant fever syndrome' there remain two other signs which may be of definite aid to the diagnostician namely the pyrexia and the blood picture.

Pyrexia.—It has already been shown that in about 60 per cent. of cases of undulant fever met with in the Mediterranean the temperature is characteristically undulatory. It has been stated that an inspection of the temperature chart alone at the end of the second or third week is almost enough to afford an accurate diagnosis. In practice, however, fourteen or twenty-one days is much too long a time to wait and merely observe the case in the hope

that the temperature may turn out eventually to be [illegible] before venturing a diagnosis. For this reason in the majority of cases this characteristic form of pyrexia helps very little towards an early diagnosis. A patient may be admitted to hospital when his temperature is either rising or falling step by step. There are so many diseases in which this step ladder rise and fall of pyrexia occurs that it is not until the second undulation commences that the significance of the temperature chart can be appreciated. If a patient is admitted when his temperature is rising gradually day by day it may be at least three weeks before its undulatory character can be recognized. In practice it is more usual for a patient to be admitted when the temperature is high and near the peak of a pyrexial wave. In such cases the characteristic form of pyrexia is more helpful since the secondary wave appears so much sooner. Sometimes cases are admitted from ships or under such conditions that a careful record of the daily temperature has been kept for some time prior to the patient's admission to hospital; under these conditions the temperature chart is of inestimable value. Here a word of warning is necessary. Sometimes a typical undulatory type of pyrexia is seen in diseases other than undulant fever, especially *B. coli* infections. I have seen cases of *B. coli* infections in which the temperature charts were indistinguishable from those of undulant fever—moreover, the general aching pains, the headache, the occasional rigors and the drenching sweats present in *B. coli* infections all help further to mislead the diagnostician. Nevertheless it will be seen from what has been written that in a large percentage of cases seen in the Mediterranean the characteristic form of the pyrexia is a valuable sign and a sign to be carefully observed. It is therefore, unwise to give patients in this part of the world, who are suffering from fever in which the cause remains in doubt, drastic diaphoretics for these merely distort the symmetrical curves of the temperature chart and further mask the true diagnosis.

The Blood Picture.—When a patient is first admitted to hospital with fever, and there is nothing of a definite nature in the way of physical signs to account for the fever the only course left to the physician is one of a process of elimination. When it is necessary to pursue such a course, the first object should be to narrow the field of possible diagnosis as much and as quickly as possible. In this respect the blood picture gives the most information for, if a leucopenia is present it excludes the possibility of malignant or subacute endocarditis and that very large group of diseases included under the title of hidden pyogenic infections; it helps to exclude the presence of a *B. coli* infection as such infections are usually accompanied by a leucocytosis. Further should malarial parasites or spirochætes of relapsing fever be present in the blood they will be observed when the films are being examined—in this way malaria and relapsing fever are also excluded. In my experience the mononuclear count is low or normal in undulant fever, this helps in ruling out of court the presence of most of the

diseases [illegible] protozoa. Hardy [illegible] in account of two fatal [illegible] cases of Brucella [illegible] in [illegible] of whom the monon[illegible] [illegible] fatality high being 19 per cent in [illegible] and 50 per cent in [illegible].

Differential Diagnosis

Pyrexia [illegible].—[illegible] cases of undulant fever admitted to the Naval Hospital at Malta from ships and establishments, were forwarded with the provisional diagnosis of enteric fever. An examination of the statistics of the health of the Navy for the three years, 1929, 1930 and 1931 reveals that enteric was by far the rarest of the common fevers during those three years. There can be little doubt that the rarity of enteric in the Navy is due to the energetic manner in which prophylactic inoculation is practised and it is my belief that the last disease to be considered in the differential diagnosis of prolonged fever amongst Naval cases should be that of enteric fever. Clinically the two diseases are fairly easily distinguishable. The more marked prostration, the sustained temperature, and the sluggish knee jerks of enteric are in marked contrast to what is seen in undulant fever. In both diseases there is a leucopenia. If diarrhœa, tympanites and rose spots are present the diagnosis is a very simple one. Enlargement of the spleen is, in my opinion, much more an early sign of enteric than of undulant fever. Sometimes, however, it may not be at all an easy matter to diagnose a very mild enteric case such as occurs in the inoculated and partially protected Naval rating. These patients suffer such a very mild attack of fever with so very little constitutional disturbance that a true diagnosis can only be made by laboratory investigations. I have never seen a typical case of enteric in a Naval rating and the atypical cases occasionally seen are usually so mild in nature that a clinical diagnosis is extremely difficult. It will be understood therefore how easy it is to mistake such cases for undulant fever.

Sandfly Fever.—The incidence of this disease is high in Malta during the summer months that is at the time of year that the incidence of undulant fever is also at its highest. The clinician is constantly called upon to differentiate between the two. In sandfly fever, the sudden onset, the pain over the eyes, the flushed appearance of the face with conjunctival injection and the pain in the loins are so typical that there is seldom any difficulty in reaching a correct diagnosis on clinical grounds alone. In both diseases there is a leucopenia, but the very rapid rise and fall of the temperature is a distinguishing characteristic of sandfly fever.

B. coli Infections.—These may simulate closely an attack of undulant fever. I have mentioned cases of *B. coli* bacteræmia in whom the temperature was typically undulatory. Further the rigors, the drenching sweats, the general aching pains in the limbs and even in the back of the neck help to confuse the diagnosis. The marked constitutional distress and the leucocytosis, however, separate these cases from *Brucella* infections.

Pulmonary Tuberculosis.—Pulmonary tuberculosis is the most likely of

all diseases to be confused with undulant fever The insidious onset, the weakness, the night sweats are all common to both diseases The pronounced optimism of these cases, that is 'Spes Phthysica,' also closely resembles the marked feeling of wellbeing which is so often present in cases of undulant fever The absence of general aches and pains arthralgia, headache or pain in the neck may help in the differential diagnosis Also in undulant fever there is a tendency for the patient to be irritable, which is rare in cases of pulmonary tuberculosis

Acute Rheumatism—There is seldom any difficulty in distinguishing cases of acute rheumatism from undulant fever The rapid onset and the extreme misery and suffering of patients with rheumatism is quite unlike anything seen in undulant fever Also, in rheumatic fever the onset of pain and swelling of the joints either precedes or coincides with the onset of the fever, a combination of events which practically never occurs in undulant fever where the pyrexia always precedes the arthralgia Late or chronic cases of undulant fever when first seen might be mistaken for acute rheumatism If the patient is intelligent, the history given by him will usually put the clinician on the road to a correct diagnosis It would be safer if all cases of rheumatism were thoroughly investigated in the laboratory, for in this way no doubt a small number of cases of undulant fever which possibly at present escape notice would be recognized

Bacterial Endocarditis—This disease is itself one of the most difficult to diagnose early The early diagnosis must depend on the result obtained by blood culture, &c In late cases the leucocytosis, and embolic phenomena with signs of infarction, usually make the diagnosis obvious It must not be forgotten that bacterial endocarditis can be produced by *Brucella* infection

Typhus Fever—Classical typhus fever is not at all likely to be confused with that of undulant fever The marked prostration the typical rash the sudden onset the character of the fever and the leucocytosis of this disease are unlikely to be mistaken for anything else There are, however, two forms of mild typhus endemic in the Mediterranean I refer to the types known as *Fièvre boutonneuse* which is widely distributed along both the African and European shores and to *F. mantana* of Toulon *F. boutonneuse* may closely resemble undulant fever because of its mild nature the rash is faint or may be entirely absent, there are practically no constitutional symptoms except extreme lethargy and weakness, the temperature gradually rises step by step for three or four days and is then sustained, at a more or less even level for about a week when it suddenly drops by crisis to normal or subnormal This lethargy, weakness, and gradually climbing temperatures seen during the first few days closely resemble undulant fever The absence of other constitutional symptoms helps to confuse the issue However the conjunctival injection which is always a marked feature, the character of the temperature the sluggish knee jerks and leucocytosis definitely separate this disease from undulant fever

this tendency towards delirium and the absence of aches and pains give further help in this direction In Malta, I am satisfied that I saw two cases of *F boutonneuse* amongst Naval ratings Both these cases were at first thought to be suffering from undulant fever, but after the laboratory findings had proved this not to be the case and after both had made an uninterrupted and fairly rapid recovery they were discharged from hospital labelled as P U O Unfortunately, it was not until I had seen the second case that I realized the probable true diagnosis of the first The second case in my opinion was typical All the signs mentioned above were present including the faint subcuticular mottling which comprises the rash of this disease Extreme lethargy and weakness were a marked feature I was unable to confirm the diagnosis in the laboratory His blood failed to agglutinate *Proteus* OX19 up to the tenth day of the disease This does not invalidate the diagnosis, since Felix (1933) and Durand (1932) have shown that some cases of *F boutonneuse* will only agglutinate OX2 strains and when this is so, these agglutinins do not make their appearance until very late in the disease, that is when the patient is well into the convalescent stage Unfortunately, no OX2 strains of *B proteus* were procurable, and I left Malta for England twelve days after this case was admitted to hospital and was unable to test his blood again

Meningococcal Meningitis —The highly nervous and irritable form of undulant fever may so closely resemble cerebrospinal meningitis that it may be impossible, or at least unsafe to exclude it from the possible diagnosis without resorting to lumbar puncture The pain in back of the neck, the marked headache the increased knee jerks and the loss of mental balance present in some cases of undulant fever are some of the confusing signs, and it is often impossible, owing to the mental condition of these patients to obtain any sort of history It is my experience that the onset in this type of undulant fever is usually very abrupt Generally speaking, the more gradual onset and the leucopenia of undulant fever are sufficient to distinguish it from meningitis Also it is seldom that *Brucella* infections of this variety are seen in which the symptoms are as severe or acute as in meningitis but, when this is so lumbar puncture gives great relief as well as assists in the diagnosis In children, especially infants, meningismus is frequently present in undulant fever here the rapid pulse and the leucopenia are the only differentiating signs we possess which will distinguish them from cases of basal meningitis with its slow pulse and leucocytosis

Laboratory Diagnosis

The following are the various laboratory methods available (*a*) blood culture, (*b*) agglutination test (*c*) macroscopic agglutination test and malta test both of which can be used at the bedside (*d*) injection of susceptible animals with patient's blood, urine, milk, &c (*e*) opsonocytophagic index (Huddleson [21]) (*f*) complement fixation test I have dealt very fully with the more important of these methods in a previous

[illegible] [13]). However, in the light of [illegible] knowledge [illegible] for me to make some amendments [illegible] to some of the statements which appeared in that publication concerning the agglutination test and its value in the diagnosis of undulant fever in Malta. For example Bigger [6], working in the Irish Free State, found that in sera submitted for Wassermann tests 20 per cent gave positive agglutination reactions with *Br. abortus* bovine to a titre of 1 20 and 2 per cent to a titre of 1 125, and this was later confirmed by Thompson [40]. Bigger maintains that agglutinins can develop in the blood purely as the direct result of invasion of the tissues with *Brucellæ* without of necessity producing symptoms of an infection. To support this he points out that although 20 per cent of the population of the Irish Free State have agglutinins to *Brucella* in their blood the incidence of undulant fever in that country is only 0·7 per million. He, therefore, considers that the agglutination test must be used and interpreted with the greatest of care in the diagnosis of undulant fever, and that the presence of agglutinins alone cannot be considered as evidence of undulant fever. Hardy [15] publishes the following figures for routine Widals and agglutinins on sera submitted for Wassermann reaction tests in Iowa and Chicago.

TABLE V

Serum dilution	Iowa		Iowa		Chicago		Iowa		Iowa	
	Routine Wassermann test.		Routine Widal work during an epidemic of undulant fever.		Routine Wassermann tests.		Routine determinations.		Routine pooling tube examinations.	
	No.	%	No.	%	No.	%	No.	%	No.	%
Neg.	479	57·3	318	71·4	957	90·4	84	70·0	150	79
1–5	194	19·4	14	12·9	23	5·8	1	5·0	—	—
1–10	100	15·0	16	13·1	3	2·3	16	13·3	10	4·1
1–20	30	9·0	15	4·4	6	1·5	8	7·5	17	8·0
1–40	4	1·1	4	1·2	0	0	4	4·2	10	3·1
1–80	1	0·1	0	0	0	0	0	0	7	2·1
1–160	1	0·1	0	0	0	0	0	0	10	4·6
1–320	0	0	0	0	0	0	0	0	6	9
1–640	0	0	0	0	0	0	0	0	1	1·8
1–1 280	0	0	0	0	0	0	0	0	4	1·0
1–2 560	0	0	0	0	0	0	0	0	3	1·1

In view of these results it is not surprising that Bigger considers that we are too inclined to clutch at a positive agglutination test like a drowning man clutching at a straw in order to explain any obscure and undiagnosed febrile condition. The views of such an accurate and astute observer cannot be dismissed lightly. Hardy [15] holds that any agglutination reaction of a lower titre than 1 40 is without significance; 1 40 of slight significance; 1 80 weakly positive, 1 160 to 1 320 positive, 1 640 and above strongly positive. Bigger holds that no hard and fast rule can be laid down which will cover the relation between diagnosis and titre and that only when clinical conditions are more or less in harmony with the findings of the agglutination test may undulant fever be diagnosed. He

fever that unless this view is taken undulant fever may in time replace influenza as a convenient dumping ground for P U O cases In support of this he quotes two cases, one of Huddleson's [20], and one of Thompson's, in both of whom titres of over 1 500 were present without any signs of illness or infection After carefully considering all the evidence, the statement which I made in my previous paper that in Malta a titre 1 10 to *Br melitensis* was significant and 1 40 definitely diagnostic of infection, would seem to need qualifying In the first place conditions in Malta are very different to those pertaining in either the Irish Free State, Great Britain or Iowa For example, in England and Wales between 20 to 30 per cent of milk samples examined contain *Br abortus* bovine Morgan [25] found 37 per cent of samples positive in Cardiff, and Priestly [31] 22 3 per cent in Burnley, Rowlands [36] 17 per cent in Bangor while in Scotland Beattie [5], found 34 9 per cent of mixed milk samples in Edinburgh contained *Br abortus*, and Smith [39], 28 3 per cent in Aberdeen, yet the incidence of undulant fever would only appear to be 0 3 per million in Scotland and England (*See* Bigger [7]) In Malta, using direct cultural methods, I found only 7 per cent of milk samples contained *Br melitensis* This investigation was carried out during the summer months when the incidence of undulant fever was at its highest Now since both Bigger's [6], and Thompson's [40] figures for the presence of agglutinins in sera submitted for Wassermann reaction test are higher than those found in similar work carried out in England and Scotland it is rational to suppose that if milk samples in the Irish Free State were examined at least 20 to 30 per cent would be found to contain *Br abortus* In my previous paper [33] I showed that after recovery from infection *Brucella* agglutinins tended to disappear rapidly sometimes extremely rapidly from the patient's blood, a fact which is supported by Hardy [15] Therefore it would seem that in the Irish Free State, 20 per cent of the population must be continually ingesting *Br abortus* The failure of the organism to produce infection can only be explained by one of three phenomena (1) Insufficient dosage (2) lack of virulence of the organism (3) lack of susceptibility of the host, or by a combination of these

Insufficient Dosage—The first and second possibilities, namely insufficient dosage and lack of virulence, are to some extent interdependent, since the lower the virulence, the larger will be the dosage required to produce infection This raises the question of mixed milk In most dairies in both the Irish Free State and Great Britain all the milk received is mixed before being retailed This probably explains why such a high percentage of milk samples in England and Scotland were found to contain Brucellæ and it would also materially lower the available dosage of organisms, since infected milk is much diluted with normal milk In the Irish Free State this milk mixing is not merely the mixing of infected milk from the cows of one herd with that of the healthy members of the same herd, it goes further than this, for most dairies in Ireland collect milk from a number of

sufficient funds and in consequence the [illegible] to dilute that from infected herds. In this way the [illegible] infecting organism is even further reduced. In Malta the purchaser buys his milk at the door of his house and the goat supplying the milk is milked directly into some household receptacle. In this way the purchaser receives the milk from one animal and if this animal is infected he receives undiluted infected milk. When examining milk samples in Malta I found that the number of colonies per c.c. in infected samples varied from 7 to 93 the average being 10 to 14 per c.c. This would mean that there were roughly 5,000 to 7,000 organisms per pint in the average infected sample of milk. It is necessary to draw attention to the fact that in all the references made to examination of milk samples in Scotland, England and Wales, those were investigated by animal inoculation methods. This is a far more sensitive method of investigation than the direct cultural method employed in Malta and also, in Malta each sample was from one animal only. Therefore the figures quoted for England, Wales and Scotland are hardly comparable with those obtained in Malta.

Virulence.—Most of the evidence both experimental and epidemiological would seem to indicate that of the three varieties of *Brucella*, var porcine is the most virulent for man and var bovino the least. Carpenter and King [8] state: "Our study of the disease shows clearly that *Br abortus* is only slightly pathogenic for man and it must be that only the most virulent strains in milk are of danger to him." Huddleson and Orr [18] (*a*) found that in a group of 500 individuals equally divided into males and females of all age groups constantly exposed to infection with *Br abortus* bovine through an infected milk supply only 1·4 per cent showed evidence of infection with this organism and only 0·8 per cent showed any evidence of active infection. Nicolle, Burnet and Conseil [26], failed to infect five individuals with subcutaneous injections of large doses of *Br abortus* bovine. Huddleson [18] (*b*), working with monkeys, found that var porcine produced a fatal disease, while var bovine gave rise to a mild febrile disease. He found the var *melitensis* to be less virulent than var porcine but much more so than the bovine variety. Hardy [15], in Iowa, reports that in this State, when only those cases from whom the infecting organism was isolated were considered in a total of three fatal cases a porcine variety was isolated from each and a bovine variety as well from one of them. Out of 28 severe cases in 23 var porcine was isolated and in the remaining 5 var bovine. Of 7 mild cases, 4 were porcine and 3 bovine and of 8 ambulatory cases, 3 were porcine and 5 were bovine. This would seem to prove conclusively that var porcine was definitely more pathogenic than var bovine, but it must be remembered that *Br abortus* porcine is much the easier of those two varieties of *Brucella* to isolate and to culture. Hardy reports that 70 per cent of infections known or presumed on epidemiological grounds to be due to var porcine were severe or moderately severe and only 30 per cent were mild or ambulatory while var bovine produced

only 31 per cent were moderately severe infections and 61 per cent were mild or ambulatory. Of the 75 Malta cases due to infection with *Br melitensis* 79 per cent were severe or moderately severe and only 21 per cent were mild or ambulatory. Here again the figures are scarcely comparable as most of the Malta cases were hospital cases, and only severe cases were admitted or retained in hospital. It would seem, therefore, that both on experimental and epidemiological grounds there is no doubt that *Br abortus* bovine generally possesses a very low virulence for the human race. It appears to be purely a matter of opinion as to which of the two varieties porcine or *melitensis* is the more virulent. From a practical point of view this point is of little importance for, we do know that both are apparently very virulent for man. These facts probably explain why in those countries, such as England, Scotland and the Irish Free State, where although the milk supply is fairly heavily infected with *Br abortus* bovine the incidence of undulant fever is low. The only exception to this rule would seem to be that of the case of Denmark, where the incidence of undulant fever is as high as 83 per million. In Iowa the incidence for the year 1929 was about the same, but in this state the majority of cases are due to porcine infections. In Denmark according to Kristensen [24], the infections are in all probability due to *Br abortus* bovine and there is no evidence to show that any are caused by *Br abortus* porcine or *Br melitensis* in that country. This higher incidence of undulant fever due to bovine infections as compared with other Northern European countries is very difficult to explain. In Denmark, either there exists an unusually virulent strain of the bovine variety of *Brucella* or for some reason or other the dosage of the organisms is greater. As has been shown this latter possibility may depend on epidemiological factors pertaining in that country such as the methods used for marketing and selling milk, &c., and for this country I cannot write with any personal knowledge of this subject.

Racial Susceptibility.—It is quite impossible in this disease to estimate an individual's power of resistance to infection. There is however, no evidence at present which would indicate any particular racial immunity to *Brucella* infections existing either amongst the Irish or any other race. It has already been shown that in milk-borne infections the invading organism in all probability gains entrance into the body through the mucous membranes of the mouth. In Malta dental hygiene is much neglected by the populace. Over 60 per cent of all the Maltese cases of the disease were found to be suffering from pyorrhœa or dental caries. This may be partly due to the lack of lime salts in the water and soil of Malta. The average diet of the poorer classes of the Maltese does not help to contribute to the development of sound teeth, being chiefly composed of carbohydrate and vegetable fats. This diet is also deficient in the anti-infective vitamin A since butter is to a large extent replaced by the use of olive oil. The deficiency of vitamin D is compensated for by the abundance of sunlight

The diet is on the whole too soft and does not stimulate active chewing In a previous paper [32], I suggested that this abundance of vegetable fat in a diet deficient in protein might produce an unusually high percentage of achlorhydraes or hypochlorhydraes amongst the population and so render it possible for organisms of the *Brucella* group to pass through the stomach in a viable condition so that they could invade the body through a portal in the lower alimentary tract Arnold [2] discussing the cause of summer diarrhœa in infants suggested that high summer temperature reduces the efficiency of the gastro duodenal anto disinfecting mechanism by reducing the gastric secretory activity This may play a part in rendering the Maltese more susceptible to *Brucella* infections in the hot summer months The Irish, on the other hand, live in an equable climate and are proverbially known for their good sound teeth, a condition due to the abundance of lime salts in the soil and water of Ireland also in the agricultural districts of this country there are ample supplies of the anti infective vitamin A in the form of fresh butter It is possible that the Irish attain a certain small degree of active immunity as a result of continually receiving small sub infective doses of an organism which possesses a very low virulence It is therefore, reasonable to suppose that, on general grounds the Maltese are more susceptible to infection with *Brucellæ* than the Irish

Summary

I have endeavoured to show how conditions in Malta differ from those in the Irish Free State and in Great Britain The main differences are given in tabular form below —

Table VI

	In Malta	In Irish Free State
Virulence to man of *Brucellæ* indigenous to the country	High	Low
Average dosage of the organism	High	Low
Susceptibility of the population	High	Low

It will be seen that in Malta conditions are ideal for infection to succeed but that in the Irish Free State they are the reverse In consequence it is much more unlikely for a person in Malta to receive a sub infective dose of the organism which will only produce an antibody response without causing any clinical signs of infection, than it would be in the Irish Free State In fact any dose received in Malta is more likely to be an infecting dose than otherwise This is supported by the following figures In a total of 288 agglutinations carried out in Malta during the period covered by the years 1929-1932 on subjects showing no signs of undulant fever, and where there was no definite history of any of them ever having had the disease the following results were obtained —

Table VII

Titre	Malta — 288 cases		British — 1000 cases	
	No.	%	No.	%
Negative	125	90 16	107	99 08
1 10	9	3 12	1	0 92
1/20	1	0 35	0	—
1/40	1	0 16	0	—
1 80 and above	0	0 0	0	—
Total positive agglutinations	3	3 84	1	0 92

It will be seen from the foregoing that the total percentage of positive reactions amongst the Maltese was only 3·64 per cent, and amongst the British it was as low as 0·93 per cent. It is, therefore, maintained that the agglutination test has a far greater significance and that it is of more diagnostic value in Malta than in those countries such as Great Britain and the Irish Free State where the chief infecting organism is the bovine variety of *Brucella*.

The Naval rating in the Mediterranean can be considered as belonging to a separate herd a herd in which the use of all raw dairy products is prohibited and which is isolated from contact with infected livestock. Therefore it would be extremely unlikely for any *Brucella* agglutinins to be found in the blood of Naval rating in Malta unless he had just recently left the United Kingdom, for it has been shown that once the stimulus to the formation of these agglutinins is removed they tend to disappear rapidly. Unfortunately, there is no note in the records to say how long the only positive reactor amongst the group of British subjects examined had been on the Mediterranean station. It is reasonable to suppose that if Naval ratings should arrive on the Mediterranean station with agglutinins for *Brucellæ* in their blood, after a very few months residence in an environment where stimuli to a further production of these agglutinins is removed all evidence of them would be found to have disappeared. I have, here, attempted to justify my original statement, namely, that in Malta an agglutination reaction with a titre of 1/10 to *Br. melitensis* was significant and that of 1/40 definitely diagnostic. When this statement was originally made it was the Naval rating who was being chiefly considered, and I think that, as far as he is concerned, my statement was justified. However, it was never intended to convey the impression that a diagnosis of undulant fever could be made on the result of one agglutination test alone. If the clinician is taught to take no notice whatever of agglutination reactions of low titres, it is possible that a true diagnosis of undulant fever in a large number of cases will be unduly delayed owing to failure to forward further material to the laboratory for investigation, for if a second agglutination test is performed seven to ten days after the first and the titre is found to have advanced this would be fairly conclusive evidence in favour of a diagnosis of undulant fever. Bigger [6]—however, quotes a case which Thompsen encountered in whom the titre rose from 1/25 to 1/1000 while the individual was under continuous medical observation, but did not suffer from any fever. Bigger rightly points out that if this patient had developed any mild febrile illness, such as catarrh during this observation period he would undoubtedly have been diagnosed as suffering from undulant fever. This is a very difficult problem as abortive cases and very mild cases of undulant fever do undoubtedly arise even in Malta. If they can occur in Malta, surely they are even more likely to arise in those countries where only the less virulent bovine strain of *Brucella* is to be found. It is quite possible that in England, Ireland and Scotland cases of mild undulant fever are

[illegible] is P U O, catarrh, or influenza [illegible] interesting to note that Wilson [15] has calculated on epidemiological data that in the year 1930, there occurred in England and Wales [illegible] cases of undulant fever. If this is true over 400 of these cases went unrecognized during that year, all of whom must have been diagnosed either incorrectly or labelled as P U O. Huddleson (*) [21], dealt with this problem in a very interesting paper in which he claims that it is possible to distinguish by means of the opsonic index between positive agglutination reactors who are actively immune and those who are actively infected. He found in patients who were either susceptible to infection or in those actively infected, that the opsonic index for *Brucella* was low, while in the actively immune it was greatly raised. It has already been shown [43] that the melitin test is to some extent relative to the development of immunity so that by the use of these two methods—the melitin test and Huddleson's "Opsono Cytophagic" index—it ought to be possible to distinguish these mild abortive cases of undulant fever from other febrile conditions arising in an immune subject who already possesses agglutinins in the blood. This will be more easily understood by studying the facts in tabular form as shown below —

TABLE VIII

	Agglutination test	Melitin test	Opsonic index
Susceptible	—	—	Low
Actively infected	— or +	— or +	Low
Actively immune	+	+	High

The anamnestic reaction is another of the difficulties which help to lead to confusion in the interpretation of the agglutination test. It will be seen that, here, the employment of both the melitin test and the opsonic index will help greatly to simplify the diagnosis in such cases. In Malta where undulant fever is endemic year in year out, one has to be forever on the look out for these anamnestic reactions. Sometimes it is extremely difficult to know whether the case is one of a true relapse of undulant fever or some other infection in a person who is immune. I think that if these principles are kept in mind not only will mild cases of undulant fever be recognized, but the danger that undulant fever will become a convenient dumping ground in the diagnosis of P U O cases will also be avoided.

Prognosis

Malta fever is a disease with a high morbidity but a low mortality rate. It is a pity that this is so for if the mortality rate had been high, more active steps might have been taken to abolish it. The disease, although the mortality rate is as low as 3 to 4 per cent is a most disabling one, 50 per cent of the cases being incapacitated for work for six months or more. Prognosis is chiefly a matter of estimating the length of time a patient is likely to be ill. This is a very difficult question to answer for relapses are extremely common. There are certain signs and symptoms which can be

regarded as favourable or unfavourable to a rapid recovery It is quite impossible to prophesy whether a case after apparent recovery will relapse, or not, and it must be remembered that each succeeding relapse is likely to be more resistant to treatment than the previous attack The unfavourable signs are —

(*a*) Fever tending to become intermittent rather than undulatory
(*b*) Lack of interest depression, and anorexia
(*c*) Wasting and anæmia
(*d*) Persistence of urobilin in the urine
(*e*) Persistent leucopenia with sustained low mononuclear counts
(*f*) Prolonged bacteræmia
(*g*) Continuously negative melitin reactions

The favourable signs are —

(*a*) Maintenance of the undulatory type of pyrexia with a tendency for the pyrexial periods to shorten and the apyrexial periods to lengthen
(*b*) Good appetite, cheerfulness, and an active interest in surrounding affairs
(*c*) Disappearance of urobilin from the urine
(*d*) Increase in the percentage of mononuclears in the blood and a tendency for the number of leucocytes to rise
(*e*) Rapid disappearance or absence of bacteræmia
(*f*) Early appearance of a positive melitin reaction
(*g*) Early onset of rheumatic symptoms
(*h*) Fall in the agglutination titre of the blood provided that the fall coincides with the subsidence of the fever

There are certain definite signs and phenomena which indicate that a case is passing into what I have already described as the severe chronic state These are real danger signals, and the process is usually a fairly gradual one The patient after the acute primary attack has relapse after relapse each succeeding relapse being more severe than the previous one and the period between each shows a tendency to become shorter and shorter eventually a stage is reached where the patient runs a continuous intermittent temperature This is accompanied by rapid wasting, anæmia acute rheumatic pains and, sometimes, jaundice The agglutination titre shows a continuous fall and does not react to vaccine treatment Even when jaundice is absent there is a marked excess of urobilinogen in the urine The polymorphonuclear count rises and there may even be a slight leucocytosis, but the mononuclear count remains low Blood and urine cultures are negative and the melitin test positive This type of case usually dies sooner or later of sheer inanition or as the result of some complication such as nephritis, or a lesion of the nervous or cardiovascular system Finally, it has always to be remembered that the appearance of some complication may bring any case, even an apparently mild one, to a sudden and fatal termination

SECTION I

[illegible]r

[illegible]ral Methods
[illegible]rmacological Methods—
(a) Trypaflavine
[illegible]ical Methods—
[illegible] Vaccines
(b) Brucellin
(c) Melitin

Prevention—
(d) Individual Protection

Conclusion

Treatment

It would be quite impossible to summarize the numerous different forms of therapy that have been tried and found wanting in the treatment of this disease. It has to be admitted that up to now no specific remedy has been discovered. However with the recent great advance in both chemical and bacteriological sciences certain of the more modern methods of treatment, both biological and pharmacological, have given more promising results. The ignorance which prevailed and still exists with regard to the pathology of undulant fever in the human body is probably largely responsible for the very slow advance that has been made in its treatment. It is proposed to give a summary of the various forms of treatment which have been tried in Malta, and a brief reference will be made to the use of "Brucellin" by Huddleson, since it would appear from his results that in this substance we have the nearest approach to a specific remedy for this disease that has, as yet, been found. For convenience this section will be divided into three subsections—General, Pharmacological and Biological Methods of treatment.

General Methods

Since undulant fever is primarily a bacteræmia, it is rational to suppose that the brunt of the attack has to be taken by the reticulo-endothelial system and that the liver, and to a lesser extent the spleen, has to play the major part in the defence of the body. Whatever form of specific treatment is to be adopted whether it be pharmacological or biological it is obvious that it will fail unless care is taken to preserve the efficiency of the natural defence mechanism of the body and to see that, as far as possible, these tissues are maintained in such a condition that they can react to the treatment given. With these principles in view and with the specific object of preserving the liver from the effects of the toxins of these infections, the following general method of treatment was evolved.

To preserve, if possible, the body defences, patients were kept at rest in bed on a liberal but light nourishing diet, with a high carbohydrate and low fat and protein content, sufficient to allow the patient about 1,900 calories *per*

diem Care was taken to see that the diet contained all the essentials for maintaining health that is vitamins micro chemical constituents essential amino-acids &c For these reasons butter, fruit and green vegetables were allowed freely with half pint of milk a day (' Cow and Gate dried) and small quantity, 4 to 6 oz of red meat 2 eggs and Marmite In Malta especially in the summer when most of these cases arise it is very difficult to get green vegetables fresh milk and fresh butter can never be obtained ' Cow and Gate dried milk naturally rich in vitamin D was used and tinned New Zealand butter It was thought advisable to supplement this diet with Ostelin and sometimes with Bemax, but even then it is doubtful whether the vitamin A content was sufficient, as the butter was found to have a low ' blue value The vitamin C content was maintained by giving lemonade to which 1 oz of glucose were added per pint Patients were encouraged to drink 2 or 3 pints of this lemonade per day In this way the calorific value of the diet was enhanced and a liberal supply of glucose for the liver was ensured Alkali in the form of large doses of pot cit and pot bic were also given by the mouth four hourly Sometimes when patients complained of the sweetness of the lemonade pot bic was added to it with success This treatment with glucose and alkalis was continued until the urine was free from an excess of urobilinogen for seven consecutive days, after which the use of alkalis was discontinued Sometimes in very resistant cases, this alkali treatment had to be persevered with for a month, but more usually fourteen to twenty one days treatment with it sufficed to free the urine of urobilinogen Care has to be taken during the period the patient is under this intensive alkali treatment that the blood calcium level does not fall as it is very inclined to do This tendency was counteracted with injections of calcium gluconate 10 c c. given intramuscularly or intravenously once or twice weekly while the patient was taking alkalies It was found to be unwise to continue this intensive alkaline treatment in chronic or resistant cases for more than four weeks In this type of case, liver extract and intravenous glucose with insulin were found to give better results The glucose was administered as a 10 per cent solution in 250 to 500 c c doses and the insulin was given by subcutaneous injection of 20 units half an hour before the administration of the glucose. Sometimes the insulin was given in 10 unit doses and the glucose, 50 grm by mouth, once daily It was noticed that the cases which were most resistant to this alkali and glucose treatment were those that had been kept on a low diet for some considerable time before admission One case which had been treated as enteric fever for forty eight days before he was admitted to hospital still had an excess of urobilinogen in his urine five weeks after being treated with glucose and alkalis, he was invalided home after six weeks treatment only very slightly improved Aspirin was also found to have a marked effect in increasing the amount of urobilinogen in the urine and for this reason salicylates and aspirin were never employed for the relief of rheumatic pains &c

High f[illegible] by [illegible] methods. The use of diaphoret[illegible] [illegible] [illegible] inadvisable in the highly nervous and irritable patient; potassium bromide was combined with the alkaline mixture. When the insomnia was persistent "Allonal" was found to be most beneficial and appeared to have no ill-effects. Morphia had to be exhibited in a few cases for the relief of splenic pain. Constipation was prevented by giving honey, brown bread, green vegetables and fruit, and by the use of mild saline aperients in the mornings. Stimulants in the form of alcohol were given as seldom as possible since alcohol inhibits the storage of glycogen in the liver. When stimulants were required more reliance was placed on such therapeutic agents as camphor, digitalis, strychnine or caffeine, also tea and coffee. Brandy, however, had to be given to some of the chronic cases and to alcoholic subjects.

Pharmacological Methods

While I was in Malta I received several reports from private practitioners stating that they had found Trypaflavine very efficacious in the treatment of this disease. For this reason it was decided to make a trial of this preparation. The preparation of Trypaflavine which was comparatively recently placed on the market by Bayer, is supplied as a 2 per cent. solution in 10 c.c. ampoules, sterile and ready for use. The dose recommended is 10 c.c. given intravenously every three days until a total of 30 c.c. has been administered. There are some precautions to be observed. Firstly, patients after receiving an injection become sensitized to ultra-violet rays and have to be protected from direct sunlight while they are having this treatment. It is, therefore, necessary to keep them in a moderately darkened room for seven days after each injection. If this is not done a very severe dermatitis may follow the use of Trypaflavine. One of my own patients by a mistake was placed on the verandah for only half-an-hour on the morning of the day following an injection of Trypaflavine and that evening his temperature was 104°1 and he was blistered from head to foot. Secondly, since this drug, like most dyes, has a certain degree of toxity for the liver cells it is important to ascertain before administering it whether there is any marked degree of hepatic insufficiency. In my opinion the most useful rough and ready test which will supply this information is that which shows whether there is a pathological quantity of urobilinogen in the urine. The test is carried out by adding, to 5 c.c. of urine in a test tube 3 drops of a solution of paradimethylamidobenzaldehyde 3 per cent. in 50 per cent. HCl. If urobilinogen is present in pathological quantities a deep red colour develops after a few minutes. Sometimes it is necessary to warm the mixture slightly to bring about the reaction. The colour that develops is proportional to the amount of urobilinogen present and it is advisable to look down the mouth of the test tube so as to obtain a greater depth of fluid to look through, as in this way

laint change[illegible] will be more readily observed [illegible] simple and [illegible] no special apparatus, and [illegible] out by the [illegible] himself If urobilinogen [illegible] urine to [illegible] red colour with the test [illegible] is in my opinion [illegible] administer Trypaflavine [illegible] treated with [illegible] these nine were acute two were chronic and severe three were mild chronic and ambulatory The results obtained were very disappointing In the acute cases only one appeared to be slightly benefited In this case Trypaflavine seemed to cut short the first pyrexial wave and the temperature remained normal after the first dose and until five days had elapsed following the last dose then the temperature rose and after eight days fell to normal After this the patient remained well and made an uninterrupted recovery In three of these acute cases only two doses of the dye could be given owing to the appearance of excessive amounts of urobilin in the urine In one case, only one dose could be given for the same reason but this case (already mentioned) developed dermatitis as a result of exposure to sunlight In the remaining four acute cases the maximum dose 30 c c was given without any apparent benefit However in two of these cases, the three doses had to be spread over a period of fourteen and seventeen days respectively, in order to allow time for the disappearance of the excessive quantities of urobilinogen from the urine which appeared after each injection In the two chronic severe cases it was only possible, owing to their poor condition to give one dose of 10 c c of Trypaflavine in both very large amounts of urobilinogen reappeared in the urine following this single dose In one of these cases there was some very slight apparent improvement following this injection but the other, very definitely, became worse In my opinion, the apparent improvement in this single chronic case was more probably due to the strenuous measures taken to free this patient's urine of urobilinogen prior to the injection of Trypaflavine than to the use of the drug itself Of the three mild chronic and ambulatory cases, two had been under treatment in hospital for some considerable time and were practically convalescent when Trypaflavine was first administered These two cases were admitted to hospital when in the acute stage and had improved rapidly under general measures of treatment and with vaccine treatment After the acute stage was over they passed into a mild chronic febrile state in which the temperature refused to definitely settle That is to say, the temperature would perhaps remain normal for one week and for the next week would show an evening rise of anything between 99° and 100° F The third case, which was similar to the other two, had been ill for some very considerable time when he first came under observation, having treated himself in his own home during the acute stage of the illness It will be seen that the general condition of the first two cases was very good when Trypaflavine treatment was commenced, but that in the third it was the very reverse In all three cases the temperature settled down to normal

following the first [illegible]. The maximum [illegible] was given to each case and all [illegible] very rapid [illegible] recovery after receiving it.

SUMMARY.

It is difficult to assess the value of a drug from the results obtained in such a small number of cases. It would appear that by reason of its toxic effect on the liver cells Trypaflavine is contra-indicated in the treatment of acute and severe chronic forms of undulant fever. Even if the toxic effect on the liver is very slight, as it apparently is in the doses recommended, the results obtained are nothing like promising enough to warrant its use in those cases in whom it is of paramount importance to protect the liver from any kind of damage. The chronic cases especially are normally extremely difficult to cure and they invariably show signs of hepatic insufficiency, that is, yellow skin, tendency towards spontaneous hæmorrhages, urobilinogen in the urine, hepatic enlargement, tenderness, &c. If this condition of the liver can be improved these cases recover, but if not, and should jaundice supervene, the outlook is usually hopeless. It is therefore, my contention that we are not justified in running the risk of spoiling any good effect which we may have already obtained with general treatment by the administration of Trypaflavine in these cases. In the treatment of mild chronic ambulatory cases in whom the general condition is good, Trypaflavine would appear to be of use and of definite value.

Biological Methods.

Vaccine Therapy.—Bassett Smith [4]. Owen and Newham (1915) [29] and Giuffre [14] have all reported a varying amount of success with this form of treatment. Simpson and Frazer [38] state that "In forty-six of our cases we have utilized the vaccine made of heat killed *Br. abortus* standardized to two billion per cubic centimetre with such an apparently favourable result that we are now employing it as a routine treatment." Alfred Corry [1], however, considers the use of vaccine, as a form of treatment, dangerous. In view of these very conflicting opinions, an account of the treatment of nineteen cases with vaccines may be of interest. In Table IX, some of the details concerning the treatment of these nineteen cases are shown in tabular form.

Dosage.—The vaccine used was standardized to an opacity equivalent to 1,000 million *Br. melitensis* per c.c. It was administered by subcutaneous injections in the following series of doses: 0·15 c.c., 0·25 c.c., 0·5 c.c., 1 c.c. and 1 c.c. That is to say, when the first dose given was 0·25 c.c., then the second dose would be 0·5 c.c., or if the first dose happened to be 0·5 c.c. then the second would be 1 c.c. and the course of treatment in such a case would only consist of three injections and not five as would be the case if the initial dose had been 0·15 c.c. It was found that in the acute stage even small doses of this vaccine (0·35 c.c. = 250 million) caused

TABLE IX

Case No.	Day of disease on which patient first came under treatment	Day of disease on which vaccine treatment was commenced	General condition of patient	Final condition	Interval between doses (one week)	No. of days after 1st dose given when temperature began to subside	Result of treatment	Remarks
1	68th	99th	Good	Undulatory (febrile)	0·25 c.c.	15th	Improved	Patient No. 1 after vaccine treatment passed into a chronic mild undulatory state which was eventually cured with Try. pallavium injections. Had one mild relapse three months later. Has since remained well
2	8th	40th	Fair	Undulatory (acute febrile)	0·25 c.c.	15th	Cured	
3	24th	70th	Good	Remittent (acute)	0·25 c.c.	6th	Cured	
4	14th	32nd	Poor	Acute undulatory	0·15 c.c.	8th	Cured	
5	9th	39th	Poor	Acute undulatory	0·25 c.c.	7th	Cured	
6	8th	42nd	Very bad	Acute intermittent	0·25 c.c.	16th	Cured	
7	8th	29th	Very bad	Acute subintrant	0·15 c.c.	—	Unimproved	
8	54th	78th	Very bad	Acute remittent	0·25 c.c.	—	Cured	
9	3rd	43rd	Very good	Afebrile at active type	0·25 c.c.	Remained afebrile	—	Both cases Nos. 9 and 10 were only given vaccines with a view of protecting any possible relapse. Both cases were afebrile and apparently cured when vaccine treatment was commenced
10	6th	32nd	Very good	Afebrile	0·25 c.c.	Remained afebrile	—	
11	11th	34th	Very bad	Acute intermittent	0·25 c.c.	—	Unimproved	No. 11 a very mild case. Result after acetate salt injection in the laboratory. Attack apparently fully aborted by the early use of vaccine
12	20th	39th	Very good	Acute undulatory	0·5 c.c.	7th	Cured	
13	108th	136th	Very bad	Severe chronic	0·25 c.c.	—	Unimproved	Case No. 13 there was a history of chronic alcoholism
14	94th	147th	Very bad	Severe chronic	0·25 c.c.	—	Unimproved	
15	13th	16th	Very good	Acute undulatory	0·5 c.c.	7th	Cured	Both cases Nos. 15 and 16 had a very severe general reaction after the first dose and both were very rapidly cured. Both were severe cases in which the disease was aborted by the early use of vaccines
16	28th	29th	Very good	Acute undulatory	0·5 c.c.	10th	Cured	
17	30th	93rd	Good	Acute undulatory	0·5 c.c.	12th	Cured	
18	12th	57th	Poor	Acute intermittent	0·25 c.c.	—	Unimproved	All cases above 18 to 1 were treated with a stock vaccine and the others with autogenous
19	44th	66th	Very bad	Acute intermittent	0·25 c.c.	7th	Cured	

[illegible] several [illegible] intimous [illegible] weed [illegible] Therefore, in [illegible] by [illegible] of illness and in the older patients [illegible] 10 years of age those who looked prematurely old an initial dose of 0·1 c.c. was usually given. Even this dose sometimes caused very acute general febrile reactions which were rather frightening when seen in weak or old people. In the acute cases which came under observation at an early stage of the disease and in whom the general condition appeared to be good an initial dose of 0·25 c.c. was usually administered. If a patient was seen within the first few days of his illness a rare happening, treatment was commenced with a dose of 0·5 c.c. with the object of trying if possible to abort the attack. This was eminently successful in three cases. One of these was a very mild case but the other two appeared to be severe infections. *See* Cases 12 b and 16. Case 12, which was the mildest of the three, was a laboratory assistant who had been working with cultures of *Brucella* in my own laboratory. The previous records of this laboratory showed that two laboratory assistants and one medical officer had contracted Malta fever. For this reason while I had charge of this laboratory I tested, by means of the haemagglutination test, the blood of all those working with *Brucella*. These tests were made at intervals of three months. This assistant had been in this laboratory for twenty-three months and had given persistently negative reactions with the haemagglutination test when he became irritable and seemed to find his work a worry. Both these characteristics were so foreign to his nature that they were at once apparent to me. I watched him carefully and one evening, shortly after this change in his behaviour had first been observed, I noticed that he looked rather hot and flushed. On questioning him I learnt that he had not been feeling too well for about three weeks and the thermometer registered his temperature as 101° F. His blood was tested and found to agglutinate both *Br. abortus* bovine and *Br. melitensis* to 1 160. Two days later his evening temperature had risen to 102·2° F. and his agglutination titre to 1 320. A dose of 0·5 c.c. of vaccine was given and this gave rise to no reaction. After a week his temperature fell by lysis and he has had no recurrence of fever since. Both the other two cases in whom a similar line of treatment was adopted had very severe general reactions following the initial injection of 0·5 c.c. In one acute case the rapid rise in temperature after the injection was accompanied by rigors and in both the cases the temperature was maintained at a steady high level of 103 to 105° F. for a week following the initial injection after which it dropped rapidly, in one case by crisis to normal. The succeeding two doses, of 1 c.c. each gave rise to no reaction in any of the three cases all made a very rapid recovery and none of them have relapsed over a period of twelve months.

Treatment of Acute Cases.—It was learnt by experience that unless great care was taken and certain precautions observed, the use of vaccines

in the acute stage could be both harmful and dangerous It was found that, in debilitated weak and wasted patients, and those that came under observation at a late stage of the disease and whose general condition for this reason was extremely poor, vaccines as a form of treatment, not only invariably failed but often produced most harmful effects It was therefore considered undesirable to commence treatment at once in such cases Better results, it was thought, would be obtained by waiting to allow time for general measures of treatment to cause some improvement in the patient's general condition For it appeared that vaccine treatment sometimes failed because the patient was in such a poor condition that his tissues were unable to respond to the antigenic stimulus of a vaccine The object kept in view in the treatment of such debilitated cases was to endeavour, if possible, to improve the patient's condition to an extent that would enable him to react to this specific form of treatment In this endeavour we were not always successful and, for this reason, better results were usually obtained with vaccine treatment in patients who came under observation early, and in young people But even in patients whose general condition was good, when vaccine treatment was commenced it could not always be foreseen how or if, they would react to the treatment Each case treated had to be watched carefully for if it did not react satisfactorily to this form of treatment it was found that it was unwise to persevere with it Provided the treatment was stopped early enough little harm was ever done In the majority of cases in whom vaccine treatment proved beneficial, signs of improvement appeared before the twenty-first day after treatment was commenced That is usually after the dose of 0·5 c.c. had been given The signs of improvement to be watched for are (*a*) drop in the temperature usually occurring five to seven days after an injection of vaccine, (*b*) a rise in the leucocyte count, especially of the large mononuclear cells (*c*) improvement of appetite and mental attitude It is also very important to watch the agglutinating titre of the serum To do this satisfactorily standardized emulsions must be used Should the titre remain steady or rise while the patient is receiving vaccine treatment there is little to be feared, or if it should fall concurrently with the temperature all is well I have seen several cases in whom a sudden drop in temperature after vaccine treatment was followed in a few days by a sudden and enormous drop in the agglutinating titre of their serum, and all such cases made a rapid and complete recovery Case 4 is a good example of this phenomenon The patient was admitted to hospital on February 1st 1932 after being ill since January 31 1932 His temperature on admission was 103·6° F and his blood agglutinated *Br melitensis* to 1 160 and *Br abortus* bovine 1 80 From blood cultures taken the same day *Br melitensis* was isolated Further blood cultures made on February 19, also isolated *Br melitensis* Vaccine treatment was commenced on March 16 1932, with an initial dose of 0·15 c.c. Five days later his temperature began to decline and continued to do so after the second dose

[illegible] On March 25 1932 h[illegible] agglutinated *Br melitensis* [illegible] a titre of 1 40 and was negative to the [illegible] organism and to *Br abortus* bovine From this date [illegible] steadily improved his temperature reaching normal on April 3 and he made a complete recovery (*See* fig 3) This succession of events is the exception rather than the rule, for it is more usual for the agglutination titre to remain steady at a fixed level while the patient is receiving vaccines and for a short period after recovery (*see* fig 1) Generally speaking, it was found that if no improvement set in by the twenty first day after treatment had been commenced with vaccines it was useless to persevere further with this form of treatment In fact all patients in whom it was continued became progressively worse and their condition was aggravated rather than improved The danger signs to be watched for when a patient is receiving vaccine treatment are (*a*) a tendency for the temperature to become intermittent and continuous (*b*) loss of appetite (*c*) listlessness of the patient (*d*) increase of urobilinogen in the urine (*e*) fall in the leucocyte count and mononuclear cells (*f*) fall in the agglutinating titre of the patient's serum without a corresponding fall in the temperature or signs of improvement in the general condition It is always wise to wait for at least, a week after the second dose of vaccine has been given before deciding to stop treatment since a severe reaction to the dose of vaccine may cause an increase in the urobilinogen in the urine an aggravation of symptoms and a persistently high fever Such reactions are however, usually followed by a drop in temperature and an improvement in the patient's condition five to seven days after the dose causing such a reaction had been given If the agglutinating titre shows a fall with no concurrent improvement in the patient's condition treatment with vaccines should be stopped at once (*see* fig 2) It would seem that in such cases the normal defence mechanism of the body is temporarily out of action and so the further introduction of vaccine merely heaps more coal on the fire There is grave danger of disrupting the defence mechanism so completely and permanently that the patient is forced into the 'severe chronic state' which is almost incurable I have seen one case who was treated very energetically with vaccines and who eventually became a severe chronic and incurable case and I find it difficult to convince myself that the vaccine treatment that he received was *not* responsible for his ultimate deplorable condition This case has not been included in Table IX as I was not personally responsible for his treatment but I was able to observe the case closely throughout the whole course of his illness The facts of this case are worthy of publication in detail for I learnt more of the dangers of vaccine treatment from this solitary example than I did from all my own cases The patient concerned was admitted to hospital on the fifteenth day of his illness He was then a typical acute case of undulant fever of the undulatory type His serum agglutinated *Br melitensis* to a titre 1 1,280 and *Br melitensis* was isolated in blood cultures There was a

history of [illegible] Vaccine treatment was [illegible] in the forty second [illegible] The vaccine used was an antigenous one containing [illegible] *Br melitensis* per c [illegible] The following doses were given at weekly intervals 0 25 c c 0 5 c c 0 75 c c 1 c c 1 25 c c, [illegible] five days after he had received the second dose [illegible] temperature dropped to normal Each successive dose of vaccine produced a definite febrile reaction the temperature rising to 103 104 F in the [illegible] noon to normal after twenty four hours until he received the [illegible] f 2 c c which caused no reaction This patient's condition appeared at this time to be very good and he was discharged [illegible] considered cured A month later he was readmitted to hospital looking ill and debilitated with a temperature of 100° F He complained of very acute pains in the legs, insomnia and loss of appetite He continued to run an irregular temperature of 99° to 100° F for about a month Vaccine treatment was recommenced on the ninety third day of his illness with a dose of 0 25 c c The titre of the patient's serum at this time was 1 320 to *Br melitensis* The following doses of vaccine were given at weekly intervals 0 25 c c, 0 5 c c 0 75 c c, 1 c c, and 1 c c After the first dose the patient's condition became worse The temperature climbed to a higher level and assumed an intermittent character The agglutination titre of the serum dropped in the first week to 1 160, and continued to drop finally falling to as low a level as 1 80, yet the fever became more pronounced and the symptoms more aggravated Finally, after this patient had been under treatment for eleven months he was discharged to the hospital for incurables where he died after an illness lasting in all thirteen months The failure of this patient's agglutination titre to react to the stimulus of a vaccine is interesting as it would appear to support the theory of a blocked reticulo endothelial system (*See* fig 2)

Treatment of Severe Chronic Type of Case—Treatment with vaccines was only tentatively tried in two such cases (Nos 13 and 14) and then only after they had received a prolonged course of treatment with glucose, insulin calcium liver extract &c Even so it was found that vaccine treatment was both useless and dangerous and tended to undo any success already obtained with other more general methods of treatment This type of case appears to have no power to react to the antigenic stimulus of a vaccine, and for this reason vaccines do more harm than good

Treatment of Mild Cases—It is questionable whether cases coming under this category require such a drastic form of treatment as vaccines Three such cases were treated Two of those were convalescent when treatment was begun Cases 9 and 10 in Table IX This form of treatment was used in these two cases purely with the object of preventing the possibility of a relapse for it was found that cases that flourished under vaccine treatment are less likely to relapse than cases treated by other methods The third case treated was a mild acute case, and after treatment with vaccines he became a 'mild chronic ambulatory case (*see* Case 1

in Table IX). He was eventually cured with Trypaflavine injections. It is interesting to note that he was the only case, of those apparently benefited by vaccine treatment, to relapse. This case relapsed three months after being discharged from hospital but made a complete recovery after a month's illness and has not relapsed since. It is probably questionable whether the vaccine treatment did benefit this case since he came under treatment at a very late stage of the disease. He was a mild case from the very commencement of his illness, and it is quite possible that the apparent improvement shown following vaccine treatment was only the natural subsidence of the fever which would have occurred even if he had not received this form of treatment. It is also emphasized that although this patient's condition improved after vaccine treatment he was by no means cured and he continued to run a low form of irregular pyrexia for some weeks after the course of vaccine treatment was completed. Eventually it was the Trypaflavine that appeared to bring about a cure and not the vaccine treatment.

Reactions.—In nearly all cases treated the initial dose of vaccine, even when it was as small as 0·1 c.c., caused a severe general and febrile reaction. This was characterized by an aggravation of symptoms, a rapid rise in temperature, sometimes a rigor occurred, and general aching body pains. Severe acute splenic pain was a very distressing symptom and frequently appeared twenty-four hours after the first dose of vaccine had been given. The pain was often so severe that morphia was required for its relief. The duration of this febrile reaction varied a good deal in some cases high sustained fever of 103° to 105° F. lasted for five to seven days, but in others only for forty-eight hours. It was seldom that the succeeding doses caused any reaction. In a few cases every dose was followed by some reaction in some mild in others severe. Usually in these cases the reaction only lasted for twenty four to forty eight hours. No relation could be found to exist between these reactions and the results obtained.

The Vaccine.—In the majority of cases the vaccine used was an autogenous one, but it would appear that, provided care was taken to ensure that the vaccine was made from a smooth human strain of organism, the results were equally as good with stock vaccines. In fact valuable time may be lost before treatment can be commenced with an autogenous vaccine owing to the time necessary for the isolation of the infecting organism.

The strain which is to be used for the vaccine should be tested for signs of roughness by the technique of Pandit and Wilson (30), even if it has only recently been isolated, for it would seem that occasionally, for some unknown reason, a strain will become rough very soon after primary isolation.

This fact was not realized at first, and it was presumed that, where autogenous strains were being utilized because they had been recently isolated, they were certain to be smooth.

In Case 5 an autogenous vaccine made with the organism isolated from the blood culture ... only been isolated sixteen days ... vaccine was prepared with ... doses of this vaccine were given to the patient with practically no effect ... the patient's condition showed no improvement or otherwise, it was decided to try a stock vaccine of known potency The first dose of 0·25 c.c. of this vaccine produced a moderately severe general and febrile reaction and four days after the second dose of 0·5 c.c. was given the temperature began to fall This autogenous strain was examined and although it had been isolated for so short a time it was found to be almost completely rough After this experience all strains to be utilized as vaccines were tested for roughness immediately before the preparation of any vaccine

Explanatory Figures and Charts

In order to demonstrate these facts more clearly, three "Agglutinin Charts, figs 1, 2 and 3, and eight temperature charts are shown

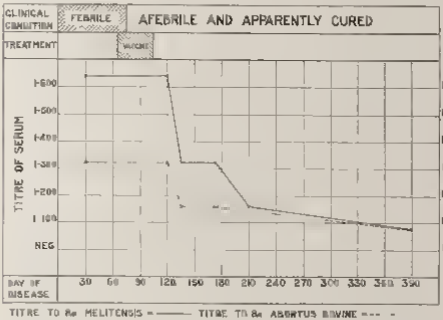


Fig 1

Fig 1.—This shows the gradual drop in the agglutinins of a patient's serum after recovery The actual observations were made on Case 19

This gradual fall in agglutinins is what appears to occur in the majority of cases following recovery Note how the titre level remained sustained at an even level while the patient was receiving vaccines

Fig 2—Shows the observations made on the chron[illegible]ntinoel in the notes, who was over treated with vaccines The s[illegible]ls till in this patient s agglutinins while he was still febrile and unl[illegible]e vaccine treatment is very clearly demonstrated in this chart It is [illegible]lown how the agglutinins continue to disappear almost entirely in these severe

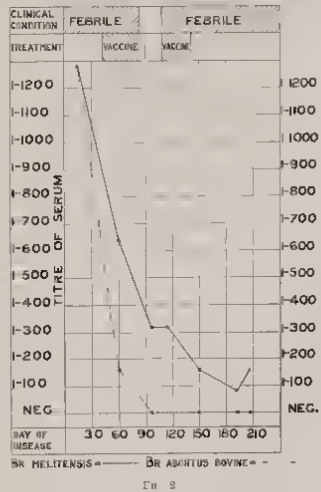


Fig 2

chronic form of cases although the fever remains unabated and the clinical condition unimproved

Fig 3—This chart shows how the agglutinins occasionally d[illegible]appear very rapidly from the blood in some patients on recovery These observations were made on Case 1 It might be considered that perhaps h[illegible]e we were dealing with a anamnestic reaction and not a true case of undulant fever In this case, such a possibility can be definitely excluded since *Br melitensis* was isolated from this patient s blood on two separate occasions The onset of illness in this patient was on January 31, 1932 He remained

[illegible] April 3 1932 Blood cultures on February 18, and on February 19 1932 were both successful in isolating *Br melitensis* The agglutination test on February 1d 1932 showed positive agglutination for

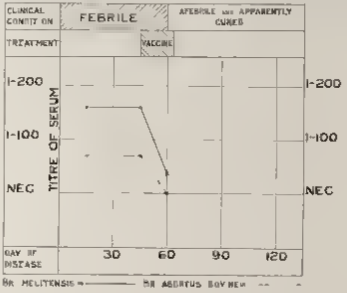
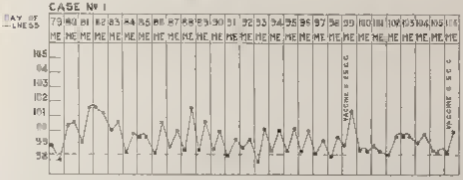


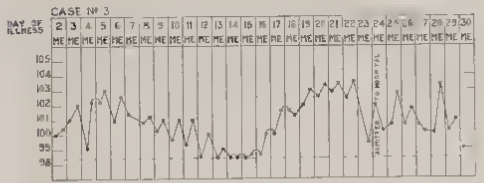
Fig 3

Br melitensis 1 160, *Br abortus* bovine 1 30 On March 26, 1932, even before the patient's temperature had completely settled down and only five weeks since *Br melitensis* had been isolated from the blood, the agglutinins had almost completely disappeared

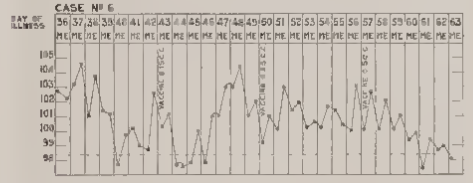
TEMPERATURE CHARTS



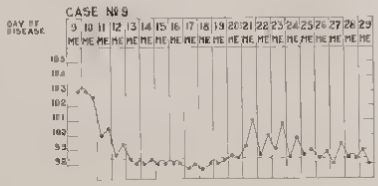
Case 1 —This chart shows the typical sort of fever in the mild chronic ambulatory type of case In this case vaccine treatment failed to produce any real beneficial effect and the patient was eventually cured with Trypaflavine injections He had a mild relapse some months later



Case 3.—This shows the typical undulatory form of fever seen in the majority of Mediterranean cases of undulant fever. It is of more than usual interest since this was one of the rare pneumonic cases of this disease.



Case 6.—This shows the beneficial effect of vaccine treatment in a very severe intermittent type of case. Note the drop in temperature following the dose of 0·5 c.c. of vaccine.



Case 9.—This is the temperature chart of a mild abortive type of case.

The patient [illegible] on the morning of May 10 1932 felt [illegible] and [illegible] He was admitted to R N Hospital, Malta on May 15, 1932 where he gave a history of having had fever for a week On admission his temperature was 103° F and his pulse 100 He complained of very severe pain in the occipital region of his head and in the back of the neck and slight abdominal pain in right hepatic region

Examination—He looked ill and was sweating freely There was severe rhinorrhoea and post-nasal catarrh The tongue was thickly coated in the centre while tips and edges were red and raw Both tonsils were inflamed

There were rhonchi present over both bases His knee-jerks were sluggish Kernig's sign was doubtful but there was definite difficulty found in flexing the head on the chest

The medical officer who admitted the case at first suspected him of suffering from meningococcal meningitis and placed the case on the "dangerous case list"

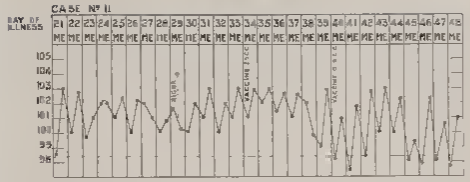
His blood picture however showed Total leucocytes 4,400 per c mm , polymorphs 69 per cent , lymphocytes 27 per cent , large mononuclears 4 per cent

Consequently undulant fever was considered in the diagnosis and agglutination tests and blood cultures were carried out The agglutination test showed positive agglutination for *Br melitensis* 1 160 *Br abortus* bovine 1 80, *Br abortus* suis 1 80 Blood culture was sterile

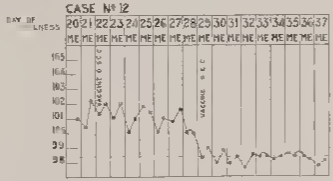
As will be seen from the chart this patient's condition improved rapidly without any special form of treatment Further agglutination tests on May 27 1932 showed *Br melitensis* 1 320, *Br abortus* bovine 1 320 *Br abortus* suis 1 320, and on June 28 1932, *Br melitensis* 1 320 *Br abortus* bovine 1 160, *Br abortus* suis 1 160 Melitin test on May 29, 1932 was strongly positive

Blood picture on June 1, 1932, showed Total leucocytes 5,800 per c mm polymorphs 53 per cent lymphocytes 46 per cent large mononuclears 1 per cent

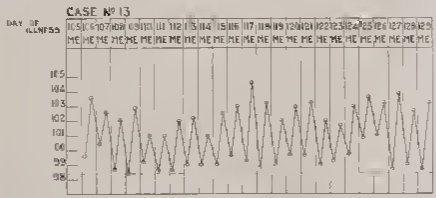
It is a pity this case did not come under observation a few days earlier for then probably, it would have been possible to have proved definitely and beyond all doubt, the existence of this form of undulant fever by means of blood culture However on both the clinical and the laboratory findings I do not think that there can be any doubt that this was a true case of undulant fever The clinical signs, the blood picture and the results of the agglutination and melitin tests support such a diagnosis It will be easily understood how this type of case could be mistaken for influenza or catarrh, and how often such cases must escape being recognized in their true light in all parts of the world



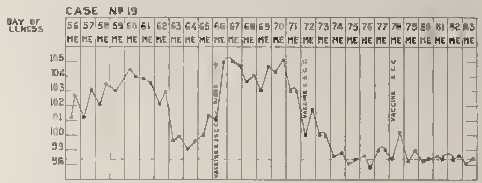
Case 11.—This is a chart of a severe intermittent case in whom vaccine treatment failed



Case 12.—This chart of a very mild case probably due to an accidental laboratory infection. It is a good example of how in cases seen early the disease can be aborted by the early use of vaccines.



Case 13.—This is a typical chart of a severe chronic case. Note the regular intermittent type of fever and the fact that this was over a period extending from the 105th to 129th day of disease.



Case 19.—This chart shows what a very severe reaction vaccines can produce in the treatment of some acute cases. It will be observed that in this case although the initial dose produced such a very severe and prolonged reaction subsequent doses produced practically no reaction.

Conclusions

(*a*) Fifteen cases have been treated in the acute stage with an apparent beneficial effect in eleven of them.

(*b*) The results were disappointing in the "severe intermittent" toxic form of the disease and in very debilitated cases.

(*c*) The vaccine must be prepared carefully and special attention must be given to certain details with regard to selection of strains, &c.

(*d*) General measures of treatment to improve the general condition of the patient, so as to enable him to react better to the stimuli of vaccines, should not be neglected.

(*e*) Vaccines are contraindicated under certain conditions especially in the "chronic" type of case.

(*f*) Care must be taken not to overdose and to see that treatment is stopped on the appearance of certain unfavourable signs and symptoms.

(*g*) The principal causes of failure of vaccine treatment would seem to be: (1) Inability of the patient to react to the treatment due to either (i) severe toxæmia, (ii) debility, (2) a badly prepared vaccine resulting in the loss of its specific antigenic components.

Treatment with Melitin or Brucellin

Huddleson (*c*) [23], has reported remarkable success in the treatment of eighty cases of undulant fever with a substance which he has called Brucellin. This is prepared very similarly to Melitin (*see* Remsford [33]). The major difference between Melitin and Brucellin would seem to be that Brucellin is prepared from a mixture of three broth filtrates in which the three types of *Brucella* have been grown for a period of sixty days. Melitin is prepared from a broth filtrate in which only *Br. melitensis* has been grown for eighty days.

Huddleson's results of treatment with Brucellin are so good that I consider it would be of value to give in detail his method of employing this substance "The patient to be treated is first given an intradermal injection of 0 1 c.c of Brucellin Should no systemic reaction occur during the next forty eight hours 1 0 c c is injected intramuscularly and repeated at intervals of three days until four injections have been given If there is a severe systemic reaction after the intradermal injection 0 1 c c or 0 2 c c is injected intramuscularly If no severe reaction follows this small dose the succeeding doses are doubled until a dose of 1 c.c. is given Three successive doses of 1 c c are then given

Huddleson found that usually each intramuscular injection caused both local and general reaction, the patient's temperature rising to 104/105 F The temperature in most of the cases treated within the fourth week of the disease tended to return to normal after the second injection He found that the ambulatory and chronic type of case of long-standing did not respond so readily to this form of treatment and that in the latter type of case, it was sometimes necessary to gradually increase the dosage up to 5 c c before signs of improvement set in In certain cases there was no reaction after the usual dose of 1 c c and in these cases the dose of Brucellin had to be increased up to 3 c c before there was any improvement It was apparently necessary to produce a general febrile reaction to obtain a beneficial effect

The injection of Brucellin into an immune subject gave rise to such a severe reaction as to be extremely dangerous hence the importance of carrying out the preliminary intradermal test before commencing treatment with Brucellin

Melitin —My own experience with this substance as a therapeutic agent is so small as to be of negligible value However I supplied several civil medical practitioners in Malta with Melitin which I had prepared there and they all reported very good results from its use I treated only three cases with Melitin, two of these were severe chronic cases and the third was a severe intermittent toxic form of the disease One of the chronic cases appeared to be very definitely benefited by this form of treatment while the other two cases were unaffected by it I realize now, after reading Huddleson's paper on treatment with Brucellin, that the dosage of Melitin which I employed was both too small and too infrequent to offer much chance of success Nevertheless, from what I have seen of Melitin treatment and what I have read of Brucellin, it is my opinion that this form of treatment is the only one which offers any chance of success in the "severe chronic cases of undulant fever It certainly did not appear to have any deleterious effect on the chronic cases as did the use of vaccines

Prevention

In a previous paper certain general measures were suggested by which undulant fever might be successfully eradicated from the Maltese Islands

Here it is only proposed to deal with the subject of individual prophylaxis by preventive inoculation. This point has never been considered seriously probably because the earlier attempts met with failure. This failure was almost certainly due to an ignorance of the antigenic unstableness of *Brucellæ* in artificial culture which prevailed in those earlier days. Now that we know more of the true antigenic structure of *Brucellæ* and have learnt how to select strains which will be suitable for vaccine purposes, the time is ripe for this method of prophylaxis to be adopted more generally.

Those about to reside in areas such as Malta, where undulant fever reaches epidemic proportions annually, and those whose employment brings them in constant close contact with goats, cattle and pigs, could be partially if not completely protected.

I have already shown that there are many avenues other than through the mouth, by which *Brucellæ* can gain an entry into the human body and so cause an infection. The mere abstinence from the use of raw dairy products therefore, will not ensure the safety of an individual in a country like Malta where the infection of both man and animals is so widespread and so prevalent.

Conclusion.

To conclude I must acknowledge my thanks to the consulting staff of the Central Civil Hospital in Malta, who allowed me to study their cases, and without whose assistance and advice I could not have had such a valuable and interesting experience.

[Note.—Reference table was printed, with the first instalment of this article, in the April 1935 issue of this Journal.]

SEA-SICKNESS

By Surgeon Lieutenant-Commander J. J. Kerville, M.A., M.B., R.N.

Sea-sickness is a manifestation of individual reaction to environment: it illustrates one aspect of the saying, '*Il n'y a pas des maladies, il y a des malades*.'

Here is a field where the functional and the organic meet: a link between the physical and psychical in which we have an opportunity to observe the development in a previously normal subject of symptoms which are associated, if not identical with, such conditions as duodenal stasis, spastic constipation, visceroptosis and mucous colitis.

A close examination of the syndrome may serve in the future to illumine the problems of those other consequences of vegetative imbalance, cyclical vomiting, migraine, and vasovagal syncope. I hope to show that sea-sickness is a reaction to disharmony in no way peculiar to life at sea since it may occur ashore.

Etiology

(1) *Mechanical Theories*.—Movements of the brain [illegible] viscera and mesenteries; movements in the semi-circular canals [illegible] ments of the eyes.

(2) *Biochemical Theory*.—Acidosis.

These theories are now largely discredited and it is only pertinent here to consider the visceral theory before passing on to the Neurotic Theory, with which this paper deals.

Visceroptosis.—It is known that emotional stimuli alone will cause changes [3], while it will follow vibratory stimuli or such jerking movements as occur in running in those subjects with the appropriate reflex mechanism. In these it is thought to account for the pain of stitch [13]. Barclay [4], has shown that profound changes may result in the shape and position of normal abdominal viscera from mechanical and mental influences, while anyone who has watched such arduous physical exercise as a fleet marathon race is familiar with the cases of vomiting which may occur cases which may also be seen after rowing regattas. It is noticeable that these symptoms only occur in certain types of men and that these may have been in excellent training and free from dyspepsia. Smith and Feiling ([5] at page 200), have pointed out that there is a characteristic picture of vasomotor instability, depressed and anxious mental state and lack of adaptability to environment to be found in patients suffering from visceroptosis, though their chief complaint is of abdominal discomfort, dragging sensations, constipation, flatulence and attacks of vomiting. These can be relieved by support or by lying down; similarly in sea sickness relief from vomiting follows these measures. Sea sickness may occur when the patient leaves harbour lying down the symptoms being headache, anorexia, coldness of the extremities, &c., but emesis is then absent and only occurs on rising. Bahola [12] mentions a case of sudden emesis on rising in a patient who had been sea-sick on the previous day. Visceroptosis having occurred, it produces emesis in the following way. If the anatomy of the duodenum is considered we find that visceroptosis will affect it where it is crossed by the mesocolon and the root of the mesentery. Compression here will cause the condition of duodenal stasis to arise, which is associated with paroxysmal vomiting and epigastric pain ([5] at 201). Under such circumstances there is evidence of dilatation of the duodenum and of the presence of abnormal peristaltic and anti-peristaltic waves [1].

Here then, we have a local and mechanical explanation for the paroxysmal discharge of nervous energy which in sea-sickness takes the form of gastric spasm and emesis. Visceroptosis in no way explains the other symptoms being itself the outcome of an underlying condition, nor do any of the foregoing theories account for the individual and racial selection seen in sea sickness, they also fail to explain the comprehensive nature of a disorder in which the mental and physical state may be profoundly affected and in which no single symptom can be regarded as basic.

These changes result from an alteration in the tone of the vegetative nervous system, which occurs in certain psycho neurological types in response to the summation of incompatible stimuli coming from the skin, muscles tendons joints eye muscles ears, nose, and viscera These stimuli are normally co ordinated to maintain poise through reflexes which do not reach consciousness, but in the victims of sea-sickness the control of these stimuli is at fault the regulating cortex has lost its selective and inhibiting influence, hypertonia results, and culminates in paroxysmal discharges Something of this conception is to be found in the following theory

(3) *Neurological Theory of Vagotonic and Sympathicotonic Types* — To Eppinger and Hess [19] in 1910 belongs the credit for first defining these types and to Fischer [17] for applying their conception to sea sickness three years later Fischer only discussed the vagotonic type, but Bobec [8], added sympathicotonic, hyper-sympathicotonic, and amphoneurotonic types Their work has been therapeutically fruitful, especially in the French navy [16] it has removed treatment from empiricism and from the use of *placebos* These investigators have however, only considered the neurological aspects of sea sickness, continuing the process of analysis followed by others and offering only a partial resynthesis Their views are, nevertheless, the most comprehensive that have been advanced, and I suggest that Bobec's term amphoneurotonia is one that can be used for all cases at all stages of sea sickness, while the physiology of the vegetative nervous system remains as obscure as it is at present This theory will be more fully considered in what follows

The Stimulus

I shall first touch on the stimuli which initiate the changes found in sea-sickness Of the four single movements of a ship, pitching, rolling, yawing and ascending, the last which is vertical is claimed to be the most nauseating, and after this may be placed pitching Abrupt movements are thought to enhance the effect Montaigne [10], declared "*C'est un remuement interrompu qui m'offense*" In my experience no single rhythmical movement will cause sea-sickness even when extreme it results from the combination of various movements Their perception is probably increased by the continuous vibration which is present, while the heavy thud of the propellers and the whir of ventilation fans contribute

The Mind

An experiment of Pavlof's quoted by Hill [21] illustrates the primitive effect of stimuli which cannot be analysed and resynthesized in effective action "While investigating the conditioned reflex in animals he examined the reaction of a dog when presented with an insoluble difficulty The dog was first trained to discriminate between a circle and an oval The latter was then made increasingly circular until the distinction was difficult

[illegible] The animal [illegible] veritable and [illegible] symptoms [illegible], prolonged [illegible] recovered. [illegible] this and say that the animal was in a state of fear—THE NERVOUS SYSTEM IS CONFRONTED WITH UNUSUAL AND IRRECONCILABLE STIMULI WHICH CANNOT BE TRANSLATED INTO EFFECTIVE ACTION, there followed a progressive yielding of the body to the unharnessed control of the vegetative nervous system. Here, it may be mentioned that monkeys react to the stimuli of a ship at sea by sea sickness. In man the survival of animal reactions to certain experiences is recognized by the use of such phrases as 'the look of a frightened animal, or 'the look of a hunted animal.' Langdon Brown [36], adhering to Langley's bisection of the vegetative nervous system has said "There are two possible reactions to danger: violent preparation for fight or flight through the sympathetic, or complete immobility, 'shamming dead,' effected through the parasympathetic: and maintains that when one is stimulated the other is inhibited. I believe this to be a misconception and that they are simultaneously stimulated in sea-sickness, where a state of fear results in amphoneurotonia.

Familiar as we are with the phrases 'paralysed with fear,' 'sweating with fear,' 'sick with horror,' 'cold feet,' 'a sinking feeling' it should be but a step to the realization that in sea sickness we have a manifestation of response to fear occurring in an individual with limited cortical control over the vegetative centres. This theory is indeed as old as Plutarch and would have been more widely accepted had the term fear not come to be identified with cowardice: and had it been recognized that fear may occur in the old vegetative personality as well as in the young cortical mind.

Under similar circumstances why do some show fear while others remain unaffected? The reason must surely be that in those who are not affected, the stimuli are controlled rationalized inhibited, and excluded from consciousness. In this connection I would mention the case of an officer in the Royal Naval Air Arm: he has never suffered from sea- or air sickness: once he has known fear when flying. The occasion was when he had been flying solo for some time at an altitude of 11,000 ft: quite suddenly he heard the roar of the engine and felt the rush of the air: he thought that he was going to faint and immediately began to descend: when he realized that the sounds were not abnormal but that he had only then "paid attention to them" he had become conscious of his machine as a thing apart from himself, perhaps from fatigue, the cortex had ceased to control the stimuli coming from his environment. Anyone living long in a large city has experienced a similar sudden consciousness of the throb and hum about him to which he is generally insensitive: the realization is accompanied by a feeling of detachment. These intrusions into consciousness normally result from sudden excessive stimuli or occur when the cortical threshold is lowered by fatigue or disease. The sea sick type is one in which the barrier to cortical admittance is overcome by a hypertonic vegetative nervous system, normally subliminal stimuli invade con-

sciousness, cortical control is overcome defective integration and response occur and a state of insecurity or fear results, in which no effective action is permitted In this type, the primitive visceral level or vegetative personality may be said to be nearer the surface of consciousness than in the immune type, whose afferent and efferent control has thrust it out of mind In the latter there is an unstudied response to environment, which is well illustrated by individual capacity for games, when, to use a phrase of Sir Henry Head's [31], 'man projects himself to the end of some mechanical appliance He goes on to say 'The vast majority of young men can acquire any of these aptitudes A small minority are so constituted that they cannot do so they do not feel safe on a bicycle, and 'cannot hit the ball' Such persons are rare among the healthy members of a community but they form a small group who are 'not fond of games I would add that this group is invariably sea-sick they cannot share Drummond's view that "all environment is an unappropriated part of ourselves ("Natural Law in the Spiritual World") The result of this disharmony is seen when they experience the movements of a ship at sea

The stimuli are chiefly received at the lowest of the three nervous levels the visceral and the reactions are primitive The mental conflict is expressed as it would be in a child, Bedingfield [22] at a discussion on Nervous Dyspepsia at the Royal Society of Medicine in 1931 said that the urge to feed and satiation were antecedent to the dawn of mental life, and were present to reflect lack of harmony in the development of cortical personality the gastro intestinal tract was the only psycho sensory mechanism available to express conflict between the infant and its environment he added that in certain cases where perfect integration had not taken place and the individual had later to face situations that reproduced the early conflict, "he reacted on the primitive level and suffered from anorexia, nausea vomiting and constipation The whole of this syndrome is not always present except in the more severe cases of sea sickness; of all the symptoms, constipation or the passage of small mucous stools is by far the commonest under conditions at sea In the Navy it is to some extent possible to exclude alteration of diet and exercise, yet the incidence of constipation as judged by individual reports and by the issue of laxatives increases greatly at sea especially during rough weather It is unlikely however that attention will be drawn to this symptom except on voyages of long duration Men formerly victims of sea-sickness but now regarding themselves as immune will still suffer from this symptom, and the descending colon will be found to be in spasm and can be easily palpated

I have stated that I do not regard sea sickness as peculiar to conditions at sea but with limited experience as here must quote others in support of this Romanis and Mitchener ([33], p 547), describe the following conditions under 'Enterospasm' which they say is found "in neurotic individuals, where one or more coils of bowel go into cramp-like contrac-

[illegible] and [illegible] Severe [illegible] and vomiting occurs and although in most instances [illegible] suddenly passes off within a few hours, the inexperienced surgeon is not infrequently led into performing a laparotomy [illegible] nothing will be found but one or more tightly contracted coils The only available treatment consists in antispasmodic drugs of which the best is atropine

I have not seen such cases ashore but in March 1931, I saw a patient in England who following a severe mental shock developed nausea and emesis accompanied by sweating and pallor It is of interest that the patient had a long past history of sea-sickness from which he could not distinguish his symptoms and that they were only manifested thirty six hours after the bad news reached him and after ALL FURTHER EFFECTIVE ACTION was impossible. The attack lasted a few hours only

The Vegetative Nervous System

The discovery of the carotid sinus reflex by Hering [19] in 1923 has thrown some light on the relation of parasympathetic and sympathetic tone to blood-pressure the triad being normally arbitrated by this reflex which maintains a constant

Sigler [35], has shown that for an effective carotid sinus response to changes in pressure it is necessary to have a 'vagotonic predisposition' and that, vice versa, a heightened sinus reflex response indicates vagal lability One of the chief syndromes which illustrates some of the effects of this reflex is that named by Lewis [24], vasovagal syncope, in this disorder the impulses from the carotid sinus inhibit the heart and depress vasomotor tone Professor Danielopolu and his colleagues [11], showed, last year that the carotid reflex is amphotropic in action and that *simultaneous* stimulation of both parasympathetic and sympathetic systems may occur Normally the parasympathetic is dominant Hering [20] it should be mentioned, does not agree with this, maintaining that simultaneous stimulation cannot occur, clinically however, I believe this to be demonstrated in sea-sickness, in which the syndrome can only be fully interpreted in this way

I would introduce this idea with a description of Lewis's vasovagal syncope in which there is parasympathetic stimulation and vasodilatation It will then be seen that sea sickness only differs from it in the presence of symptoms which can be explained by sympathetic stimulation in sea-sickness and the absence of others which are the consequence of sympathetic inhibition in vasovagal syncope Lewis [24], describes the following symptoms in the latter the attack occurs rarely, if ever when the subject is lying down it is associated with conditions causing nervous apprehension it is preceded by a sense of instability it occurs in healthy but unathletic types it produces dizziness but no vertigo there is yawning facial pallor a slow regular pulse, 50 40 30 there is nausea, retching movements, a

[illegible] rapidly and [illegible] the bowels will be [illegible] shortly there is dimness and mental confusion, the pupils are little, if at all dilated there is a heavy sweat on the forehead, or perhaps generalized there is slow deep, and sighing respiration there may be slight clonic movements, urine is not passed during the attack though a large volume of watery urine is passed after wards there is a fall in blood pressure which may be extreme (50 systolic); unconsciousness usually accompanies the attacks which last about ten minutes and are succeeded by headache tremulousness and fatigue for thirty-six hours Lewis remarks that both his observations and those of Demolopolu Waller Czermak, and Recht are inconsistent in one detail with the experimental effects of a pressure increase in the carotid sinus in man namely the absence of shallow respiration There is some uncertainty as to the extent of the difference between these attacks and those named Gowers Syndrome in which Ryle [34], describes unconsciousness as rare and believes the blood pressure may rise or fall These attacks are associated with more marked subjective symptoms such as *angor animi*, or a sense of dying, of fading away, or of floating in space and a sense of heaviness and coldness in the limbs Ryle suggests that here too are vagal and vasomotor changes and uses the term 'medullary storm

How do these attacks differ from sea sickness?

In sea-sickness the respiration is always slow and shallow to the point of disappearance, unconsciousness is absent except in complicated cases, the blood-pressure does not fall and there is no secretion of watery urine during or after the attack constipation has always been present in my cases finally, atropine improves the symptoms without reducing the bradycardia in fact the reverse is the case whereas in vasovagal syncope Lewis reports no improvement of symptoms but cardiac acceleration with atropine Lewis closed his remarks on the carotid sinus reflex with the words "On clinical grounds it would be legitimate to suggest that this mechanism can be set in motion through many afferent channels other than those at present recognized by physiology If we note that the difference between vasovagal syncope and sea sickness can be accounted for by the presence of sympathetic inhibition in the former and sympathetico toma with vasomotor spasm in the latter, if we remember that the reflex may be amphotropic and be associated with inhibition of gastric movement followed by excitation then it is legitimate to conclude that this mechanism is involved in sea sickness The alteration in the reflex response can be attributed to the difference in the stimuli, in the case of vasovagal syncope it is psychological, in sea sickness there are physical stimuli and these affect the sympathetic particularly There is a succession of afferent impulses from the parietal peritoneum, which results in efferent impulses down the splanchnic nerves The thoracic and lumbar sympathetic and the splanchnic ganglia are in a state of excitation

Confirmatory evidence may be got from the consideration of cases in which operation has revealed tumours of the carotid body Coke and Dunlop [9] reported such a case in which the patient, aged 36 complained of left epigastric pain vomiting and breathlessness the pain was relieved by vomiting and by lying down, as occurs in cases of sea-sickness, other symptoms were giddiness and constipation which was marked Apart from the tumour of the carotid body examination revealed anæmia which would account for the increased respiratory rate of 20 to 25 a minute noted in this case There was also contraction of the upper segment of the rectus such as is found in sea-sickness, but here it was limited to the left side, the tumour itself being unilateral (left) The pulse rate on admission had been 80, but fell to 52 for six days subsequently rising to 80 before operation it was not apparently correlated with vomiting The blood-pressure was 110/75

The close similarity between this case and one of sea-sickness will be apparent without further comment

The presence of emphoneurotonia in sea-sickness is well illustrated in the symptom of constipation Constipation may result from overaction of either sympathetic or parasympathetic, from both of which the large bowel draws its innervation With sympathetic overaction there is loss of colonic tone and spasm of the rectal sphincter while in vagotonia there is spasm of the colon In cases of sea sickness the descending colon can often be palpated in spasm and the rectal sphincter is also contracted Desnos [13] reports that he has frequently observed the presence of constipation at sea and the great increase in the tone of the rectal sphincter, but declares this to be mainly a 'nervous phenomenon due to sudden change of environment Bennett [6] mentions that out of a hundred cases of sea sickness 71 were constipated, but he regarded this as cause not effect Fischer [17] noted its presence without comment I have said above that this symptom will persist in men who have long considered themselves immune from sea sickness thus I have observed two cases in which the symptom lasted sixteen days, with the exception of days on which medical assistance was given

Pathology

Heredity Age Race Predisposition Immunity

Heredity —Eppinger and Hess have stated [15], that vagotonia is a hereditary quality, in which case it is possible that a predisposition to sea sickness may be inherited we have a parallel case in the hereditary nature of cyclical vomiting

Age —The immunity of infants and children up to 2 years has been reported [14 17 29], while their lack of or low vagus tone [17] has been connected with this by Fischer Too little is known of the infant organism or psychology to pursue this further here, but it may be noted that the

average fasting blood-sugar in early infancy has been found to be only 0·08 per cent., which does not support Ortel's [28], conclusions as to the connection between hypoglycæmia and sea-sickness or its cure by glucose administration. It is of interest that the reaction of children and of the elderly to belladonna is less than that of adults: these two extremes, which show immunity to sea-sickness, are not affected by the usual doses and show a high degree of tolerance. This may perhaps be related to Sigler's [55] observation that the carotid sinus reflex is rarely found in youth and then becomes increasingly conspicuous, reaching a climax in middle age.

Race.—It is compatible with the theory that sea-sickness occurs in the maladjusted to expect that those races which show the greatest degree of adaptability to altered environment will be most free from it. It is not, therefore, surprising that the greatest colonizing race should be noted for a high immunity. One may also cite the Chinese, who are at once good sailors and able to live with equal content in Lima or Limehouse. Again the Malays immortalized in the sea tales of Conrad, and some communities who live continuously in fishing boats, are among the most readily adaptable of people. At the other extreme is the semitic race, never great travellers, noted for their sufferings at sea, and among the least plant races of mankind.

Immunity and Predisposition.—Of an unselected group of a hundred seamen, who were questioned on the subject of sea-sickness, 40 per cent. stated that they had experienced it either on entering the Navy or subsequently in small ships. In no instance had this incapacitated them to the extent of rendering them unfit for their duty, as shown by the absence of any entry in their medical records. Fifty-six per cent. stated that they had never experienced any symptoms, and 4 per cent. had suffered from headache and anorexia. The percentage of men who fell entirely to acquire any immunity can be deduced from the invaliding rate from this cause in the Service and is 0·024 per thousand. Severe cases are those shown in the returns of the Health of the Navy as having been placed on the sick list and represent an average of 0·104 per thousand. These figures have been deduced from the total for the whole period from 1909 to 1931, omitting the years 1916 to 1920 inclusive, for which there are no published records. In the group of a hundred seamen there was one among the sub-group of forty who had experienced sea-sickness who still frequently vomited and who was always constipated at sea but he was never incapacitated and had never had to apply for treatment. He was of the hypersthenic type.

The conclusions from this group of a hundred men should be viewed with some reserve, not only because of the limited number questioned, but because there was no uniformity in their length of service at sea or in the class of ship in which they had had their sea experience. The natural inclination to deny sea-sickness must also be reckoned with.

The importance of considering the class of ship is shown by the fact that of the 40 per cent. stated to have been sea-sick 98 per cent. had succumbed in destroyers, and only 10 per cent. in battleships. Thus it

seems probable that under uniformly bad conditions a higher percentage would be found to react to their surroundings with sea sickness.

Under the heading Pathology the conditioned reflex form of sea sickness may be discussed. Most writers refer in general terms to the mental element in sea-sickness and give examples of nausea and actual emesis which have occurred at anchor in calm water or simply on boarding a ship. This is distinct from sea sickness at sea in that it results from a conditioned reflex and not from mental dilemma caused by irreconcilable physical stimuli. Just as the habit of sleep, once formed, results in somnolence normally following the bed time ritual, so the symptoms of sea sickness may be aroused by recalling past associations and perceiving once more the sights and smells, which have on former occasions been accompaniments of the disorder. This conditioned reflex form of sea sickness occurs only in very delicately balanced subjects who have previously suffered severely from sea-sickness. I have encountered it in only one male. The pathology of this form of disorder may be briefly summed up in Cowper's lines —

> I call in the life breed errors in the brain,
> And these reciprocally those again.

Symptoms.

These are too familiar to require enumeration, but attention is drawn to the noticeable relief which follows the act of emesis. These discharges of nervous energy are succeeded by a variable period in which there may be exhaustion, but there is also great mental improvement and such a feeling of well being as might accompany a return of cortical control over a vegetative system now hypotonic.

Signs.

Type.—Early history as children they had night terrors and required the comfort of a night light, being unable to adjust themselves to darkness. They may have been, or be, somnambulists. They were regarded as unusually intelligent for their age. They had a tendency to syncopal attacks in youth which most commonly occurred in church, in crowds, on parade, or while waiting in groups for medical inspections. The only features in common here are their presence in a neid and emotional tension. They suffered, or suffer, from giddiness in trains, motor cars, roundabouts, swings, &c. they may be sensitive to heights; they felt symptoms similar to those of sea-sickness on their first attempts at pipe-smoking and show a distaste for nicotine when the sea is rough.

Physique.—They are of the lean anxious type; they have cold and clammy hands and feet; they have an unstable vasomotor control and are, or were, subject to blushing when ill at ease; the digestion may be good and the bowels regular, but there is a sensitiveness to fats such as fried meat and pastry especially when at sea; they may suffer from borborygmi under conditions of tension.

Habits and Mentality.—They do not adjust themselves readily to changing surroundings, thus they are over conscious of vibration, noise, and changes in equilibrium. They are prone to construct visual images and to live in memories which will remove them from reality. The most uniform feature of this type is introversion and a deficiency in the herd instinct. They are absorbed by their own interests, health, and organic processes and, it may be permissible to say, allow the vegetative personality an unopposed entry into consciousness.

By contrast with this type, the immune is the well nourished, even tempered, athletic, and contented man, who co-operates in all group activities. Cæsar defined the difference when speaking to Mark Antony,

> Let me have men about me that are fat
> Sleek headed men and such as sleep a nights
> Yond Cassius has a lean and hungry look
> He thinks too much: such men are dangerous.

The group that has acquired immunity may be taken to be somewhere between these two extremes: to them time and experience bring a control and integration of afferent impulses, which are not permitted to reach consciousness and produce sensation. That this is possible in practice is apparent in sea-sickness, while other examples of control over the vegetative system by the higher centres are found in the suppression of sleep, of movements of the bowel and bladder of cough or in the gradual regulation of a colostomy opening.

Of PHYSICAL signs there are few that need be dwelt on, but my observations do not allow me to agree with the statement that the blood pressure falls [7, 14, 17, 18]. In the sea-sick type the blood pressure is at all times slightly subnormal, just as the pulse is slow: but during sea-sickness the blood pressure has been found if anything to be slightly higher than in harbour. The pulse rate is decreased in sea-sickness and may fall to 40 more especially when treatment with tincture of belladonna has been administered. With this cardiac deceleration there must normally be present in sea-sickness a degree of vaso-constriction, or else there would be a fall in blood pressure, which as stated is not the case. The pulse becomes rapid and irregular during and shortly after emesis: this probably coincides with loss of vasomotor spasm and that reduction in vegetative tone already suggested.

The lack of influence of belladonna on the rate is of interest and indicates that this slowing of the pulse is not vagal, but is due to inhibition of the cardiac accelerator fibres.

It should be stated that this observation does not agree with that of Fischer [17] who found an acceleration of the pulse rate to follow the administration of atropine to the sea-sick.

Another physical sign which may be reviewed is respiration. There is a partial fixation of the chest in a position of expiration, indicating contraction of the bronchial muscles, and there is a prolonged expiratory

pause, so that movements are slow and shallow. Examination of the abdomen will reveal varying degrees of visceroptosis, a sign which is exaggerated by the contraction of the upper segment of the recti muscles.

Nervous System.—The tendon jerks and pharyngeal reflex are much increased at first but later the tendon jerks diminish. Though Romberg's test cannot be applied under the circumstances, incoordination is demonstrable by the finger nose test. The exaggeration of the pharyngeal reflex is of interest since it indicates irritability of the glossopharyngeal and vagus nerves, which are among the afferent and efferent paths for the carotid reflex.

The pupils dilate widely during emesis and for a variable time after this may be interpreted as resulting from a decrease in the previously dominant vagotonia. Nystagmus is absent.

Percussion of the spine shows varying degrees of tenderness over the 3rd and 4th and 5th dorsal vertebræ and interspaces, the significance of which I am unaware. Maitland [27], mentions one case in which there was "pain in the back" but no reference to this tenderness of the spine has been found.

Temperature.—This is subnormal in the sea sick and ranges between 97° and 98° F. It is an indication of the lowered metabolic rate associated with dominant vagal tone.

The volume of urine is greatly reduced and, in the absence of bladder distension indicates diminished excretion. This decreased output suggests that the generalized vascular spasm also involves the renal vessels. It is not secondary to dehydration for it is found in the absence of emesis.

The vomited matter is a mixture of gastric and duodenal contents. It is highly acid suggesting that hyperchlorhydria which is found in anxiety states and indicating vagal stimulation [2] though the amount of mucus present must result from sympathetic stimulation in addition [2].

The stools if any are passed, are mucous.

Treatment

Both for prevention and treatment active occupation is of proven value. An historic case is on record in the crew of Cornish miners, with which in 1793, Lord Exmouth in the *Nymph*, frigate captured *La Cleopatre*, previously incapacitated by sea sickness, these men are reported to have overcome their disorder during the fight.

It is partly for this reason that fewer seamen than passengers suffer from severe sea-sickness, a fact for which there is statistical evidence in the annual returns of the United Fruit Company's Steamship Service. Lewson [25], in discussing another condition of vegetative imbalance, hay fever, remarks that attacks were averted in his case when watching a cricket match and suggests that sustained interest produced an unconscious desire to inhibit the attack. Flack [18], stated that pilot passengers when air-sick had been known to recover as soon as they left the aeroplane cabin.

and were allowed to fly with [illegible] ventilation While this con[illegible] that mental distraction plays [illegible] that increased sense of unity with environment to which Head [31], has drawn attention This treatment by occupation may be called mental displacement, the stimuli connected with sea sickness are subordinated to more dominant ones, just as when pain is present it may be excluded from consciousness by counter-irritation Even in a severe case of sea-sickness in a gun layer emesis was prevented by going on deck to watch the results of target practice Montaigne declared in connection with sea-sickness that he could *le dompter par moi meme* and the condition certainly is under the control of the will if the proper method is adopted

Passing from prophylaxis to treatment I would recommend first a firm abdominal binder this is a venerable but often neglected method It will fail in its purpose of supporting the viscera if it is placed over the umbilical region instead of the hypogastrium

If nausea threatens regular breathing exercises in the fresh air have been advised in the past on more or less empirical grounds, the explanation of their success lies in a double effect there is the action on the diaphragm and that on the sympathetic Mogendie [26], showed that the act of emesis depends chiefly on a sudden forcible contraction of the diaphragm If the respiratory rhythm is preserved this is prevented, and in addition anoxaemia with its train of ills will be avoided The influence of respiration on the sympathetic nervous system has only very recently been investigated [36] but it appears probable that a tonic discharge to blood vessels runs rhythmically in phase with respiration If this is the case it follows that by reducing the long expiratory phase, which is accompanied by slowing of the pulse, the vasomotor tone will also be reduced and a condition more nearly approaching the normal re-established An incidental effect of reducing the expiratory phase is to reduce the period during which intra abdominal tension is lowered by the action of the diaphragm and the relaxation of the abdominal wall

I come now to the treatment of acute, severe, and chronic cases in which the prescribing of drugs is required Those, for whose use there is a scientific basis are belladonna and hyoscine I have found these of value if given in adequate dosage and consider that the lack of good results which is sometimes reported, is a consequence of inadequate administration The over excited terminals of the vagus are less susceptible to atropine than are normal ones and applying this to belladonna I have found that 20 minims of the tincture may be given three times a day without toxic effect and with relief of sea sickness A single initial dose of 40 minims may also be given The reaction is peculiarly individual and must be discovered for each case the dose being increased if it proves ineffective Paralysis of accommodation and dryness of the mouth give adequate warning of approaching overdosage

The use of the [illegible] bromide is advised in preference to [illegible] alone, because of the [illegible] present in the former, which both [illegible] peripheral action of the atropine and hyoscamus while neutralizing the stimulation of the bulbar centres which the latter produces. Bohec [8] has reported that it is twice as effective as atropine as a vagal paralysant.

Where liquids are not retained, atropine sulphate gr. $\frac{1}{50}$ may be given hypodermically, this is supplemented by hyoscine hydrobromide gr. $\frac{1}{100}$ in hypodermic tablets placed under the tongue, the action is rapid but brief and chiefly of value in the acute stage. The depression and impairment of memory resulting from the repeated use of hyoscine renders it unsuitable for men who must remain on duty. It is the group of narcotics to which hyoscine and atropine belong that forms the basis of all successful sea-sick cures of which Vasano (camphorates of hyoscyamus and hyoscine) recommended by Seelo in 1929 is probably the most effective.

Antacids and gastric sedatives have not been found to be of value.

In 1932 I tried the action of liver extract given orally in view of its reported effectiveness in the vomiting of pregnancy. In doses of one tube (= Wellcome brand) twice daily it was not found to prevent or ameliorate symptoms in sea-sickness. This year I have tried the administration of liver extract intramuscularly, being supplied with the material by Messrs. Parke Davis and Company. Its use was again suggested by the success which has followed its employment in the prevention of radiation sickness. The makers advise a daily dose of 2 c.c., but so far opportunity has only occurred for the administration of single doses. It appears to be more effective as a prophylactic than as a cure in sea sickness, though in the latter case it improves symptoms. A sufficient number of cases have not been treated for a more definite statement to be justified, but the further investigation of this treatment would be of value.

In acute cases where vomiting is severe and prolonged, the induction of sleep is the most effective measure. Bohec [8] has rightly said that to make the victims of sea sickness sleep is to cure them. For this purpose hyoscine hydrobromide gr. $\frac{1}{100}$, potassium bromide gr. 10 and chloral gr. 10 are satisfactory. The explanation of the effectiveness of sleep has never been offered, but, as a function of the parasympathetic system it appears that we have here another instance of replacement therapy, the nervous energy is here diverted into another channel. One of Pavlof's experiments [30] may be quoted in illustration. He found that if dogs were taught to expect food upon a certain signal and that this food was then withheld the animals rapidly fell asleep. One vegetative activity was replaced by another through which the accumulated nervous tone could be expended. It is of interest that a state resembling sleep can be induced reflexly through the carotid sinus [23] and that in certain cases emesis in sea-sickness is suddenly replaced by a form in which an irresistible desire for sleep is the chief manifestation. I have met with two such cases in both of which a severe emetic form of sea sickness had quite suddenly given place to the

[illegible] the urgent desire to sleep was [illegible] in the other a rating, the compulsion was so great [illegible] could fall asleep standing up while still performing his duties [illegible] liable to be confused with petit mal and is of some slight [illegible] significance

Summary and Conclusions

In all the theories of causation previously advanced there has been an [illegible] the truth an attempt has here been made to incorporate them into a composite whole The unifying medium has been the psychological change common to them all

Sea-sickness is a vegetative neurosis resulting from the reception from a changing environment of stimuli which cannot be co ordinated or translated into effective action by certain individuals whose cortical control over the vegetative system is slight

Individuals in whom these symptoms persist fall into a group showing lack of psychological as well as physiological adaptability

The symptoms resulting from this sequence indicate a state of amphoneurotonia, in which vagotonia predominates and which cannot be distinguished from the primitive reaction to fear

The suggestion is made that transient visceroptosis is always present in sea-sickness, and is a mechanical cause for the act of emesis

There is reason for believing that the carotid sinus reflex is responsible for the physical changes accompanying sea-sickness and for the slowing of the pulse, which is shown by the effect of atropine to be independent of vagotonia

Vasomotor spasm is of secondary importance in producing symptoms and may be neglected in treatment, which must be directed at reducing vagotonia by vagotropic drugs Liver therapy is under trial

Reasons are given for the effectiveness of controlling the respiratory rhythm and for the induction of sleep as ancillary methods of treatment Prophylaxis includes replacement therapy by active occupation

It is suggested that sea-sickness may be included in a comprehensive term amphoneurotonia embracing similar reactions met with under other conditions of disharmony

BIBLIOGRAPHY

[1] Alvarez W A "The Mechanics of the Digestive Tract New York 1922.

[2] Baskin B F Canad Med Assoc Journ July 1933 p 6

[3] Barclay A E Address on the Normal Stomach Lancet 1934 2 561

[4] Idem The Digestive Tract A Radiological Study London 1933

[5] Bedford-Smith P and Stiling A. Modern Medical Treatment London 1931 1 2

[6] Bennett R A Sea sickness and its Treatment Brit Med Journ 1 28 1 752 54

[7] Bibel A. Sea sickness Ann Otology 1926 2 481-490

[8] Bibel J " A New Treatment of sea-sickness Presse Méd, 1930 38 21 32

[9] Cobb M and Dunlop H A Irritation of the Vagus by a Tumour of the Carotid Body Lancet, 1932 2 1050

[illegible] 17 6

[illegible] Vol. VII. 30 18

[illegible] Lpz 30 313 14

[illegible]

[14] [illegible] 1929 121 s 10

[15] [illegible] 1910

[16] Pascal [illegible] of Serv ces [illegible] Ed Bl [illegible] Bl [illegible] 81 303

[17] [illegible] J S [illegible] and V [illegible] 1911 30 1649

[18] Mack M [illegible] and S [illegible] Soc Ul 1911 24 (Ophth Sec tion) 15 19

[19] Herring H E The Carotid [illegible] Its Sinus Mechanism Brain April 1923

[20] *Idem Med Annot* 1931 27 1703

[21] Hill L Philosophy of e Biology [illegible]

[22] Hutchinson R and others Nature [illegible] Lond Roy Soc Proc 1932 25

[23] Koch E *Zeitschr f Augenheilk* 1929 64 Quoted by Hess W R Autonomic Nervous System 1932 2 1139 and 1350

[24] Lewis F Vasovagal Syncope and the Carotid Sinus Mechanism Brit Med Journ 1932 1 873

[25] Lewis S C Hay fever [illegible]

[26] Magendie Mentioned in Vol [illegible] Paris 1814 Quoted by [illegible] above

[27] Maitland T D General Observations on Shrinkage and the Intervertebral Disc Brit Med Journ 1931 1 1116

[28] Mott G H Pathol Soc [illegible] Lancet 1927 2 811 813

[29] *Idem* Treatment of Sea Sickness 1931 1 2 2 1116 45

[30] Pavlov I *Skand Arch Phys* 1898 54

[31] Report of the Air Medical Research Committee Med Res Coun 1931 38

[32] Ribbert R. Pathogenesis and Treatment of Sea Sickness Brit Med J 1912 2 2 59 61

[33] Romanis W H C and Mathews H H Surgical Emergencies in Lon London 1931

[34] Rand J A Vasovagal Syncope Ann Surg 1929 1 76

[35] Starr L H Internat Journ Med Sc July 1 1881 110

[36] Woollard H H and others Discussion on the Functions of the Sympathetic Nervous System Proc Roy Soc Med 1932 25 Sect of Neurology 1592 1603

OPTIC NEURITIS AND PAPILLOEDEMA A STUDY OF SEVEN RECENT CASES

By Surgeon Lieutenant Commander [illegible] STEVENSON

The examination of the fundus of the eye is often of considerable help in elucidating or confirming the diagnosis of extra cranial conditions It is not however, intended in this paper to discuss all the ocular manifestations of general disease, but to confine it to the inflammatory and pressure signs of the optic nerve head, as observed in the undermentioned cases all of which were admitted to the wards of the Royal Naval Hospital Chatham during the past year

A brief description of the anatomy of the optic nerve may not be out of place before describing these conditions and the cases illustrating them

The axis cylindars from the ganglion cell layer of the retina collect

[illegible] the optic nerve It [illegible] pass through the choroid and transmit a network of connective tissue—the lamina fibrosa—and piercing the sclerotic, becomes medulated The nerve now commences its intra orbital path extending from the back of the eyeball to the optic foramen then through the optic canal to the optic chiasm, where partial decussation takes place, and so to the brain The nerve consists of numerous bundles of fibres separated by connective tissue septa, between which are lymph spaces It is enveloped by sheaths continuous with each of the three meninges of the brain The pia mater intimately clothes it and sends prolongations into its substance The dura envelopes the nerve loosely It forms a lining for the optic canal and is in continuity with the periorbita lining the orbit Between the dura and the pia mater are the intervaginal lymph spaces and the arachnoid These subdural and subarachnoid spaces communicate with the cerebral spaces of the same name Anteriorly the three sheaths unite with the sclera In the optic canal the ophthalmic artery is embedded in the sheath of the nerve and to the inner side, separated by a very thin wall, is the sphenoidal sinus The sinus lies just below the nerve in its intracranial portion The central artery (branch of the ophthalmic) and vein of the retina pierce the nerve about 12 mm behind the globe and run in its substance to emerge in a little depression known as the physiological cup at the centre of the disc The optic disc is 1 5 mm in diameter (magnified to 5 mm in the direct method of ophthalmoscopy and about 15 mm indirect) It is usually round but may be irregular or oval, as in astigmatism Its margin is generally well defined but in hypermetropia and astigmatism it may be somewhat blurred Sometimes there is a narrow white ring around the disc, the scleral ring, this is due to the choroid and pigment epithelium of the retina not extending quite up to the margin of the disc so that the white sclerotic is seen shining through the retina

Black pigment is often seen around the margin The colour of the disc is usually pale pink but not uniformly so The central part is paler, and may be white and this pale area extends outwards so that normally, the temporal side of the disc is paler than the nasal

One of the earliest signs of optic neuritis is hyperæmia of the disc—an increased reddening compared with the disc of the other eye though it must be remembered that variations of the normal colour of the disc do occur Comparison between the two discs should always be made Next, blurring of the margin will be seen, usually first on the nasal side, and later affecting the whole circumference, so that it is difficult to define the limits of the disc (Mention must be made here of the condition of pseudo neuritis which may cause confusion The discs look hyperæmic and slightly blurred, but there is an absence of all other signs of disease, both local and general It occurs sometimes in hypermetropia and in astigmatism, and the appearances are less marked when viewed by the indirect method) In optic neuritis, the arteries are usually small and the veins engorged Later

the physiological cup may be filled up [illegible] swelling of the disc may occur There may be exudation [illegible] hæmorrhages on the disc, which become radially striated This is an inflammatory process In diseases causing retinitis e g syphilis diabetes, renal and vascular conditions the optic nerve often suffers as described by virtue of being in anatomical and physiological continuity with the retina It may also occur from extension of inflammation of the meninges of the brain—from infection of the nasal sinuses from extension of a retro bulbar neuritis as may occur in disseminated sclerosis and poisoning by lead alcohol and tobacco The condition may be unilateral at first but later is bilateral Persistent unilateral optic neuritis may be due to tumours of optic nerve or orbit cellulitis of the orbit and hæmorrhage into the sheath of the nerve

Papilloedema resembles optic neuritis in appearance and is often confused with it though the pathology is different In addition to the appearances described, there may be but not necessarily so increase of the exudate partially covering the vessels and there may be increase of hæmorrhages on or close to the disc The salient feature however is œdema from pressure, which shows itself by marked and measurable swelling of the disc

As has been mentioned, the intervaginal space of the optic nerve (the subarachnoid space) is in free and direct communication with the cerebral subarachnoid space, and the central retinal vessels, entering and leaving the optic nerve 12 mm behind the globe pass through this space and are therefore subject to any increase of pressure that may exist The pressure of the blood in the central artery has been estimated at 100 mm Hg but that of the veins is very much lower Consequently, in cases of intracranial pressure the inflow of the blood to the eye will be little affected but the outflow of blood and the flow of lymph from the nerve head into the subarachnoid space will be impeded and as a consequence there will be increased transudation of lymph, with œdema and swelling of the nerve head

The commonest cause of papilloedema is increased intracranial pressure from cerebral tumours Cerebellar and tempero sphenoidal tumours are extremely often associated with it, but in the subcortical region and pons only about half the cases develop it It also occurs in some forms of meningitis cerebral abscess and encephalitis, but is more rare than in tumour The condition is usually bilateral, though not necessarily equal on both sides however, little reliance can be placed on the localizing value of this fact in tumours—though it is said that the side affected first may indicate the side of the tumour

The symptoms of optic neuritis and papilloedema apart from the symptoms of causative disease may be very vague Visual acuity may be diminished and transient attacks of blurred vision occur There may be concentric contraction of the visual fields scotomata or hemianopia but it

is important to remember that even in severe cases as in some described below, visual acuity may be practically unaltered throughout If the case progresses the discs become atrophied and blindness results

Seven cases will now be described illustrating seven different causes of optic neuritis and papilloedema They are not in any sense complete records but are described chiefly from an ophthalmological point of view

Case 1 —An example of rapid onset of papilloedema due to increasing cerebral pressure from new growth Corporal R M, aged 24 Admitted 20 January 1933 for investigation of headaches He was physically well developed and according to reports from his ship and relatives he was usually bright and alert, but on admission he was morose and resentful and his general behaviour seemed to point to a psychogenic cause for his symptoms His only complaint was of headache sometimes frontal, sometimes general Occasionally he had nausea and once or twice vomited a little after retching Pulse 60—70 No abnormal physical signs detected in any system Vision right $\frac{6}{6}$ left $\frac{6}{6}$ fields full, fundi normal No visual complaints Four days later his condition appeared to be the same, and he resembled a case of schizophrenia Although there were no visual complaints the fundi were examined again and found to be normal One week later he complained of blurred vision, and was examined again This time the eyes were slightly prominent and slight ptosis was present The pupils were small equal with normal reactions Fields full Right and left vision $\frac{6}{6}$ General condition the same Each fundus now showed a pink swollen disc with blurred edges engorged veins and small exudates close to the discs Close to the right disc was a small hemorrhage Bilateral papilloedema was reported Cerebrospinal fluid was clear, under slight pressure, but there were no abnormal contents No localising signs could be made out

The following day for the first time, the patient had vomiting of the cerebral type and died soon afterwards

Post mortem The cerebral convolutions were flattened and in the left frontal lobe opposite the anterior end of the corpus callosum was a neoplasm, 2 in across, distorting the lateral ventricle and bulging through the lower surface to invade the opposite cerebral hemisphere The centre of the tumour was hemorrhagic and histologically it was a spongioblastoma

Case 2 —Illustrating gradual onset of papilloedema due to increased intra cranial pressure from cerebral abscess

An A B, aged 31, was admitted on September 6, 1934, with chronic right suppurative otitis media dating with intermissions, from 1928 He complained of headaches pain behind the right ear and a slight purulent discharge from that ear Soon after admission he became unconscious for a short period Lumber puncture showed turbid cerebrospinal fluid under pressure A mastoid operation was performed and revealed a cholesteatoma with evidence of an extra dural abscess around the lateral sinus After operation he improved for a time but headache persisted with malodorous otorrhœa and discharge from the wound There were no visual symptoms and the fundi were found to be perfectly normal The right pupil was very slightly smaller than the left Reactions normal Fields of vision were full throughout the disease The fundi were re examined a fortnight later and then some of the very earliest signs of involvement of the optic nerve head could be detected Both discs were redder than formerly, and the disc margins were slightly blurred There was no swelling nor were there exudates or hemorrhages and the vessels were normal Intracranial pressure from a right temporo sphenoidal abscess was suspected but there were no localising signs

[illegible] the right pupil [illegible] slightly smaller than the left Corde [illegible] clear there were [illegible] perceptible minute [illegible] very slight [illegible] Patient had a slight bet [illegible] ly He was quite cheerful eating and [illegible] ll On October 29, 1911 [illegible] ther exploratory operation was per [illegible] pes evacuated from behind the right lateral sinus A week later [illegible] examination of the fundi was made The margins of the discs could not be identified the physiological cups were filled in and the veins were slightly engorged but there were no hæmorrhages or exudates The condition was slightly more marked in the left fundus but the right pupil was rather sluggish to light reaction The sight was unimpaired The right ear and mastoid cavity were still draining freely temperature and pulse remained normal and apart from a mild headache the patient felt quite well and was sitting up in bed reading A week later the right pupil barely reacted to light and it continued to remain smaller than the left The discs were now slightly swollen above the level of the fundus, but vision and general condition were unaltered A few days later the swelling of the discs had increased, both to an equal extent and there were two tiny hæmorrhages on the left disc Free purulent discharge from the mastoid persisted Temperature was raised slightly at night Repeated examination of fundi a few days later showed 2 mm. of swelling of both discs but vision was unimpaired Headache was less, and the patient continued to improve A few days later there were tiny hæmorrhages on both discs and small exudates were present close to them The cerebrospinal fluid was still under slight pressure, but it was clear with no abnormal contents The mastoid cavity was now clean and granulating No pyrexia. Headache had subsided The patient was bright mentally alert and eating and sleeping well He had no complaints at all, but further examination of the fundi showed increase in the papilœdema. Both discs were equally swollen and œdematous looking and the vessels on them partially hidden by whitish exudate These exudates took a form determined by the radiating nerve fibres and gave the discs the typical appearance of being striated radially, which has been likened to a chrysanthemum Numerous hæmorrhages surrounded close to the discs were present and the veins were markedly engorged The arteries were slightly smaller than usual otherwise the rest of the fundi appeared normal X ray of skull was negative but there was a leucocyte count of 14 000 Patient's general condition remained good but on November 30, he complained of one or two fleeting attacks of very misty vision These attacks lasted a few seconds only and in the intervals vision seemed to be normal The right pupil remained sluggish and smaller than the left The right knee jerk was slightly more brisk than the left. Right ankle clonus present and pass positive of left reflex finger The fundi showed no advance in the papilœdema but on December 5 evidence of increasing œdema in the nerve heads was observed and, after having been free from headache for several days he commenced to have frontal headache with vomiting The vestibular and cerebral symptoms seemed anomalous and made attempts at localization of the abscess very difficult, but on exploratory operation was decided on The radical mastoid operation was performed but exploration of right temporo sphenoidal lobe produced no pus The brain substance was under pressure The patient showed signs of cerebral irritation after operation and died two days later

Post mortem The outstanding lesion was a localized and circumscribed thick walled abscess, about the size of a large walnut which appeared on the inner surface of the posterior part of the left frontal lobe just above the corpus callosum It contained thick pus

The deep and almost central position of the abscess may have accounted for the symptoms being so latent at times The examination of the eyes however gave little reason to doubt the steady and unrelenting progress of the disease

The fundi were examined altogether thirteen times Perhaps it might be interesting to formulate the results as follows —

Date	Appearances	History
24 [illegible] 34	Normal	1 week after admission and 5 days after mastoid operation Vision unimpaired 1 earliest signs of involvement of optic nerve
0 [illegible] 1	Slight hyperaemia of disc and very slight blurring of nasal margins	
[illegible] 1 [illegible]	Margins of discs could not be identified Physiological cups filled in	Headache Mastoid and right ear draining freely
10 [illegible] 11	Slight increase in swelling of discs	Right pupil barely reacting to light Reacting smaller than left
[illegible] 11	2 small haemorrhages on left disc	Free mastoid discharge still runs Temp up at night Operation scar now vaulted from behind right lateral sinus
[illegible] 11	I S Q	Less headache
[illegible] 11 [illegible]	Swelling of 2 dioptres increasing	General condition improving
[illegible] 11 [illegible]	I S Q	Dates
20 11 34	Haemorrhage on both discs Exudates appearing close to discs	No complaints
25 11 34	Papilloedema increasing	Mastoid cavity healed
30 11 34	I S Q	Passing attacks of blurred vision
5 12 34	Swelling of nerve heads increasing Swelling 3 d in each disc i e about 2 5 mm	Leucocyte count 14 000 Headaches and vomiting
7 12 34		Radical mastoid and exploration of brain for abscess
8 [illegible] 34	Papilloedema as previously noted	
3 [illegible] 35	Patient died	

Had this patient lived, bilateral optic atrophy would have followed the papilloedema and he would have been completely blind

Case 3 —Illustrating bilateral optic neuritis from lead poisoning

Dockyardman aged 54 Suffered from lead poisoning some years previously which was held to be attributable to his work in the Dockyard He developed arthritis of the left hip a few months later but had been fairly well and working regularly ever since On February 5, 1935 he complained of giddiness nausea vomiting and weakness of the limbs He was admitted for investigation

Patient had no visual complaint and with each eye could read $\frac{6}{6}$ well Refraction showed a very low degree of simple hypermetropia and no astigmatism cerebrospinal fluid Wassermann reaction urine blood urea &c , were all normal Examination of the fundi, however showed that both discs were slightly swollen and their margins very blurred The vessels appeared normal There was no haemorrhage on the discs but there was a small deep haemorrhage near the right one

Lead may be absorbed through the skin, inhaled as dust or taken into the system by the mouth It may affect the eyes in different ways (1) By transient or permanent loss of vision without ophthalmoscopic signs—due to a retro bulbar neuritis from the lead toxaemia (2) Retinitis due to lead nephritis (3) Optic neuritis due either specifically to the lead or secondary to vascular or renal changes (4) By optic atrophy due to the primary effects of the lead on the visual apparatus or secondary to the condition noted under (1) This case appears to be due to the vascular change produced by the lead Blood pressure was 240/125

Case 4 —Illustrating bilateral optic neuritis from suspected tumour of the optic nerve

Marine, aged 28, who stated that a fortnight before admission he noticed that vision of the right eye was slightly misty Patient was very fit and had no other complaints Refraction almost emmetropic, but right vision could not be improved Right vision $\frac{6}{9}$ left vision $\frac{6}{5}$ The right fundus showed scattered

small superficial hæmorrhages The arteries appeared normal, but the veins were greatly engorged The disc was very slightly swollen it was striated radially, the vessels on it obscured and the margins were quite indistinguishable The left fundus was perfectly normal Cornea, media and pupils were normal and fields were full

Complete investigation clinically bacteriologically and by x rays failed to reveal any abnormality or to indicate a cause for the condition A tumour of the right optic nerve was suspected, though there was no pain no proptosis, and the movements of the eyes were normal He was discharged to duty recommended to be kept under observation, and to be readmitted to Hospital in three months time On readmission the appearances of the right fundus was exactly the same as previously noted Vision right $\frac{6}{9}$ left $\frac{6}{6}$, left fundus normal The patient was very well and had no other signs or symptoms, and no complaints except slight misty vision of the right eye Primary tumours of the optic nerve are rare They are sometimes very slow growing, and this may be the cause of his condition

Case 5.—Illustrating optic neuritis from basal meningitis

A B, aged 26 Admitted for investigation of headaches Patient's only complaint was of frontal headache of two months duration The aching was of a dull character very slight during the day, but worse during the evening General condition very good No pyrexia There were no visual complaints and vision was $\frac{6}{6}$ in each eye The pupils were equal in size and normal in reactions Fields of vision full In both fundi the discs were hyperæmic and their margins were so blurred that they could not be identified but there was no measurable swelling of the discs, though the physiological cups were filled in The arteries were somewhat tortuous, but within normal limits The veins were normal and there were no hæmorrhages or exudates *X* ray of skull, negative Urine normal There was no history of syphilis but the Wassermann reaction was positive Lumbar puncture was performed, and the cerebrospinal fluid found to be slightly turbid but not under pressure There were 345 cells per mmm the globulin was increased and the cerebrospinal fluid Wassermann reaction was also positive The colloidal gold test showed a meningitic curve Syphilitic basal meningitis was diagnosed The patient appeared to be quite well and had no complaints except the headaches. There was no head retraction or any other abnormal sign on examination except the very definite optic neuritis in both eyes Vision continued to be $\frac{6}{6}$ Fields were full, and no scotomata could be detected Three weeks after admission the patient suddenly became almost blind in the left eye Examination showed an extensive hæmorrhage on the temporal side of the now slightly swollen disc, and involving the macula The veins were engorged, and there were exudates scattered about close to the disc Right fundus showed the condition of optic neuritis unchanged and vision unimpaired Blood pressure normal Two days later vision began to return in the left eye and, under carefully graduated doses of hydrargyri and N A B injections, left vision gradually improved The headaches ceased entirely and the hæmorrhages began to be absorbed so that by the time he was invalided three months after admission there was only one small sub hyaloid hæmorrhage in the left fundus but the discs continued to show optic neuritis as previously described Right vision improved to $\frac{6}{18}$ and left remained $\frac{6}{6}$

Case 6.—An example of optic neuritis from neuro-retinitis of acute nephritis

Rifleman, aged 19 This condition commenced with tonsillitis followed by œdema of the ankles and later by œdema of the arms legs feet and face The patient presented signs and symptoms of a severe attack of acute renal disease The urine was heavily loaded with albumin and leucocytes red blood cells and casts were present Blood urea 171 mgm. per 100 c.c. and 40 to 50 oz. of urine

were being passed daily. Under treatment the blood urea subsided to 60 to 70 mgm. per 100 c.c., but albuminuria was still marked. One month after admission, for the first time the patient complained of misty vision. The fundi showed numerous patches of white, fluffy looking exudates and a few haemorrhages. The disc margins were very ill defined and the physiological cups were filled in though no swelling could be observed. The left fundus was affected less than the right. The condition then was one of albuminuric retinitis with the optic nerves affected as part of the neuro retinitis. The patient was gravely ill, and the vision became slowly but progressively worse, so that everything was misty. No further change could be observed in the fundi. Under general treatment, however, he started to improve, the exudates in the fundus absorbed, the vision began to clear and, though there was still some albuminuria, the blood urea was down to 40 mgm. per 100 c.c., and the patient was fit to be discharged to his own home five months after admission.

Usually it is the chronic interstitial form of nephritis which is often associated with retinitis, this complication means a serious prognosis as death usually takes within two years. In acute nephritis, if retinitis should occur which is rare, the prognosis is much better as in this case.

Case 7.—Illustrating optic neuritis from nasal sinus infection.

A. B., aged 24. On January 8, 1935, this rating suddenly noticed that his vision was very hazy in both eyes, but much worse in the right. He was admitted to hospital on January 29, 1935, for investigation. There was no relevant previous history and vision had always been very good. Patient appeared to be fit and well, but he was rather of a dull type. No pyrexia. No headache or pain in the eyeballs. Right vision was reduced to hand movements only, left vision $\frac{6}{9}$. Pupils were equal and reacted rather sluggishly to light. The right optic disc showed a condition resembling early optic atrophy. Muscles and vessels appeared normal in both eyes. The left disc was blurred on the nasal side and had the appearance of an optic neuritis. Both visual fields showed marked peripheral contraction. The cerebrospinal fluid and urine were normal. Wassermann reaction negative. X-ray of skull and teeth showed nothing abnormal. There was no evidence of embolism of the central retinal artery or thrombosis of a vein, and complete investigation from all angles was negative until his nasal accessory sinuses and the neighbouring structures were examined. By transillumination and x-ray nothing abnormal could be detected. Clinical examination, however, revealed some oedema of the superior and middle turbinate bones, and some pus above the right middle turbinate. Exploratory puncture of the sinus was undertaken. Nothing was found in the antra or the right sphenoidal sinus, but pure pus welled through the needle in the left sphenoidal sinus. This pus grew an organism of the *proteus* group on culture. In view of these findings operation was decided on and, under a general anaesthetic, both middle turbinates and the whole of the anterior wall of the left sphenoidal sinus and part of the wall of the right were removed. Thereafter the sinuses were periodically irrigated and the condition cleared up. Unfortunately central vision has not improved, but peripheral vision of the left eye shows signs of increasing, and the patient can get about much better.

Some writers deny sinus infection as a cause of optic neuritis, but others state definitely that it does occur. Bearing in mind the very close relationship of the sphenoidal sinus to the optic nerves, toxins from a septic focus may cause inflammation of the nerve behind the eyeballs (retrobulbar neuritis) which may become a visible optic neuritis and eventually lead, in certain cases, to atrophy of the nerves; there is reason to believe that the above sequence of events occurred in this case.

THERMAL ACTIVITY IN NEW ZEALAND

ROTORUA

By Surgeon Commander A G BLE R N

The following brief report of the waters in the leading and most curious thermal centre in New Zealand has been obtained together with the attached analysis of water and mud

The mineral waters in therapeutic use at the Rotorua Spa are of two main varieties—(1) an alkaline sulphuretted water, emollient to the skin and sedative in reaction and (2) a free acid water which due to the presence of free sulphuric acid, is mainly stimulating and tonic in reaction These two waters have, respectively, the distinguishing names of the "Rachel and the 'Priest and the baths containing them are labelled accordingly

There is, in addition a valuable siliceous mud similar to that found in Pistany in Czechoslovakia which in its own sphere in hydrotherapy exerts an influence as a curative agent

The free-acid (Priest) waters are the most valuable in the treatment of arthritis, fibrositis rheumatic affections, and cases of nervous debility The alkaline waters and mud baths are used mostly in those cases of fibrositis, where the condition requires a softening effect, and in the types where pain is a manifest symptom these baths are invaluable as soothing and sedative agents.

Of recent date the most satisfactory effects of mud treatments have been manifested in skin conditions notably in that of psoriasis Cases which have resisted all other forms of treatment have cleared up in a manner which is almost magical and so frequently have such cures been effected, that it would appear that the siliceous mud of Rotorua has a specific action as a therapeutic agent in these diseases

The mineral waters quoted below have been analysed for their chemical content —

Free Acid Waters (" Priest)

Potassium chloride	2·08	grains per gallon
Sodium chloride	15 31	" "
Sodium sulphate	19 74	" "
Aluminium sulphate	12 35	"
Ferrous sulphate	1 90	"
Calcium sulphate	4 85	"
Magnesium sulphate	0 60	"
Silica	22·93	"
Sulphuric acid (free)	16 80	" "
Total solids	96 47	
Gases Free C O2	4 51	
Free H2S	1 80	
	102 78	

Temperature 130° F to 160° F

ALKALINE WATERS ('Rachel')

Sodium chloride	65·87 grains per [illegible]
Sodium sulphide	10·27 —
Sodium silicate	23·76
Sodium bicarbonate	19·47
Sodium sulphate	1·50
Sodium borate	1·85
Potassium chloride	1·26
Lithium chloride	0·43
Calcium chloride	trace
Ferrous bicarbonate	0·01 —
Calcium bicarbonate	0·41
Carbon dioxide	0·1
	1·9·1

Temperature 91° F. to [illegible] F.

SULPHUR MUD

Silica	45·3
Alumina	6·1
Iron oxide	1·40
Titanium dioxide	0·40
Lime	0·10
Magnesia	0·[illegible]1
Alkalies	Nil
Free sulphur	0·6
Sulphuric anhydride	0·81
Water and organic matter	10·16
	[illegible]

The analyses can also on application be expressed in terms of ions, in parts per 100 000 (centigrams per litre)

The above report is condensed from that kindly furnished by the physician in charge of the Government therapeutic establishment in Rotorua. This is a handsome building offering ample room and a large variety of treatment to visiting patients. In addition to the medical officer there is a nursing staff in attendance and a number of qualified masseurs. It is amply equipped for treatment by heat and light and for all forms of electrical and hydro-therapy.

A patient from the Naval Base is at present taking a course of treatment in this institution. He reports that he is making excellent progress with regard to his general condition, and that his daily treatment is carried out at a charge of five shillings.

The public baths for the use of residents and visitors are attractive and well run. They include acid and alkaline baths, radium baths, and a new large naturally warm (or more appropriately "hot") swimming bath which is of a deep blue colour. They are all splendidly housed and the interiors of the bath buildings are tasteful and pleasing in design. The courtyard of the main building, which is known as the Ward Bath, looks across Lake Rotorua and over a fine expanse of country.

There are an adequate number of private individual baths in the same establishment which can be had at a cost of one shilling per bath.

The natural phenomena of the district are usually shown to the tourist at Whakarewarewa ("Whaka"), a Maori reservation adjoining Rotorua.

There are, perhaps, more striking examples in the [illegible] every type of the local thermal activity is to [illegible] although it is a showground and is widely known its interest seems so extraordinary as to be unspoilt by tourist exploitation, and to be worth describing even at a risk of competition with a guide book

The Maoris are thoroughly sophisticated, but have contrived to retain a charm unusual to native races exposed to civilization, the Rotorua natives seemed much superior to those seen near Auckland or even further North in the neighbourhood of Paihia and the Bay of Islands Their primitive methods of cooking are effective and interesting Potatoes and other items suitable for boiling are placed in flax bags attached to long strings and slung into natural boiling pools, being pulled out when cooked Bread is made to rise in iron cooking pots placed in hot sand The pots are then covered in steam boxes which are simply wooden boxes built over a steaming vent in the ground

What seemed most remarkable was a cool running trout stream full of fish, with pools of boiling water bubbling up from the earth within a foot of its brink, and a geyser in play at a distance of ten or fifteen yards If a finger is dipped into the river bed in mid stream the earth at the depth of an inch or two will be found to be quite hot Before the Government prohibited the practice, the Maoris used to catch their trout and throw them alive straight into the boiling water In every direction within this area steam can be seen rising from the bush and from every minute hole in the ground between the paths There are cold, warm, hot, and boiling pools, patches of black white or pink mud in similar degrees of heat and cold are interspersed between the pools of water there is an all pervading smell of sulphur or sulphuretted hydrogen and the whole atmosphere appeals to a vivid imagination as an *inferno*

Pieces broken from the earth show a bright yellow colour like pure sulphur Some geysers are extinct or quiescent, but one is in constant action and has never stopped in living memory This is known as the Pupakura or beautiful rock from the various coloured volcanic deposits shining in the sun

Another geyser blew up during my visit the column of water rising to a considerable height with alarming suddenness Several lives have been lost as a result of standing too near an apparently quiescent geyser

There is a large pool of black and boiling mud close to the trout stream with bubbles jumping two or three feet into the air in a striking resemblance to leaping frogs This is of interest inasmuch as it is said to be similar to the basis of Antiphlogistine obtained in the United States

Children are frequently scalded while playing in the village, and the Maoris believe in the mud as a perfect curative dressing in these cases It is interesting to note that the children spend half their time diving for pennies in a cold river and the other half in getting comfortably heated in a warm pool a few yards away The prevalent weather in the Winter and

[illegible] The white mud is said to be of value in the [illegible]

[illegible] remarkable difference in the degrees of activity in the pools and springs both of mud and water Quiescence and furious energy will be found side by side with extinction closely adjoining One small mud area emits a bubble only once in a minute or so, and is called by the Maoris the 'relief worker,' in slighting comment on the Government organization for the unemployed It is said that the pools become especially active after the immersion of a human or other animal body, and that this is a determining factor in the investigation of a loss Their depth is beyond estimation, and there is no possibility of recovery of any remains beyond perhaps a few bones stripped bare of flesh After the disappearance of a young woman a year ago a large evil looking pool was found to be bubbling more ferociously than ever, and her handbag lipstick &c, were discovered close to the brink It was thought that she might have been overcome by sulphur fumes or that she might have been startled by a sudden exacerbation of the boiling water and have stumbled over the edge In any case she has not been seen since

Tourists used to throw bars of soap into the pools and geysers to increase their activity, but this has been stopped as dangerous

The guides insist on visitors keeping within the pathways, as new fissures are apt to appear overnight and crusts of earth are liable to give way at any moment Casualties have generally been found to occur among strangers wandering by themselves or among individuals of that large group which disregards the advice of experience Thus, the show-place of Rotorua 'sights,' is well marked out in paths, and everything is arranged for the benefit of the tourist There is a model Maori "Pa" or village and many specimens of Maori carving, the earlier samples of which show intricate and clever workmanship carried out with the most primitive of tools It is understood that the ancient Maori carving is now as dead as the old life in the Maori Pa, and that the workmanship of the present day is taught in the Government schools with modern implements Carving used to be one of the functions of the tribal priests who would spend months or years in the perfection of one work of art

At the opposite end of Rotorua there is another Maori district named Ohinemotu, inhabited by what appears to be a different tribe Here the surrounding bush has not been as yet so thoroughly intersected with paths nor so well mapped out as at Whakarewarewa and the visitor was warned that on the rash rounding of a corner he might end his days in an unsuspected boiling pool Steam was issuing apparently from every bush

At Ohinemotu there is a Maori Church containing some fine native woodwork, but what intrigued the writer, in the greatest degree, was the fact that all the graves in the churchyard seemed to be belching steam Each was surrounded by puddles of boiling water, and steam rose high above every tomb As an allegorical indication of the future state of the wicked the

effect was awe inspiring One was told that the dead were not buried in the ground which indeed would appear to be impossible but were placed in the heavy stone sarcophagi raised as monuments to their memory The cemetery was certainly aseptic

The Maoris used to make elaborate carved poles after the manner of the totem poles of the Red Indians, and meant to commemorate some outstanding event or landmark in the history of the tribe On the top of one of these in the churchyard is a bust of Queen Victoria erected as a memorial by the natives At the bottom is water boiling more furiously than any kettle

At Whakarewarewa the guide showed some reddish earth which she gathered from the vicinity of the trout stream This makes a most perfect plate polish and after a moment's brisk rub caused the dirtiest of cigarette cases to shine like a jewel in the sun

Not the least interesting of items was the type of wooden individual baths which the Maoris make for themselves in the open air After exposure for a year or two to the various fumes in the atmosphere it becomes coated with a silicate deposit which gives it the appearance almost, of an earthenware bath

The country around Rotorua is wild and beautiful It is one of the few remaining areas in which the bush is comparatively unspoiled The great kauri trees do not grow so far south but there are many giant rimu trees growing to a height of 200 ft and more The district lies in a net work of lakes set amongst the mountains Two of these lakes within a mile or two of each other show a deep blue or a bright green colour respectively in different lights of the sun They are known as the Green and Blue Lakes and are situated not far from Lake Tarawera, from the shore of which rises the mountain of the same name which by its eruption in the eighties of last century changed the face of much of the surrounding country and caused considerable loss of life The upheaval brought about the destruction of the pink and the white silica terraces near the mountain which were regarded as one of the sights of the world All the rivers and lakes are full of trout and are much frequented by anglers

Near Rotorua is what is known as the "fairy spring" this being the source of one of the small streams up which the trout come from Lake Rotorua to spawn It is literally swarming with fish which are strictly protected and which are so tame that they can be fed by hand

As in other parts of New Zealand, the animal life is of no great interest, being mostly imported from England and elsewhere and being in no way distinctive of the country Deer and wild pig can be hunted not far away, and in this respect it may be noted that deer of several kinds in certain districts have increased to such an extent since importation that they are being destroyed with the same zeal and industry as that with which they were introduced It is doubtful however if this is really necessary and if it could not be obviated by a little regulation The spirit of destruction

appears to be [illegible] of the native bush of which there is but a [illegible] gradually becoming less from year to year As nothing [illegible] hostile depletion of the original forests which has taken place in a [illegible] period of time must have a decided effect on the climate

Of the native birds the tui and the bell bird can be heard all through the bush, which apart from them bell-like notes is quite dead and silent

The Government is planting wide tracts of land with new forest but little attention is paid to the native trees, which are replaced by quick growing varieties of the pine New Zealand native timber is some of the most valuable in the world, but is stated to be slow in growth

While visiting Rotorua an opportunity was taken to visit the electric distributing station on the Waikato River at Arapuni This supplies the southern half of North Island and in the course of its erection the river bed had to be diverted to an old bed long since left dry In the distant past the constant changing of the river from one bed to another, due probably to volcanic disturbance, had bare the remains of a buried forest The tall and blackened tree trunks can still be seen standing by the river, and their wood is used in the making of small curios and mementoes of New Zealand

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NICH CULPEPER, GENT STUDENT IN PHYSICK AND ASTROLOGIE

COMMUNICATED BY SURGEON LIEUTENANT J MANSELL REESE R N

NICHOLAS CULPEPER (1616 1654) was well known in his day as a herbalist and as a writer on medicine and astrology His unauthorized translation into English, in 1649 of the Pharmacopœia Londinensis caused a good deal of indignation among the Members of the College and a few years later he again displeased them by publishing, with Peter Cole a book called 'The English Physician Enlarged with 369 medicines made of English Herbs that were not in any impression until this Both these books had a very large sale

However, if the members were displeased with Nich Culpeper, he himself apparently did not see eye to eye with the "Colledg of Physitians," for in the Epistle Dedicatory of the third edition of a book published in 1653, he gave them a considerable amount of advice, much of which was no doubt very necessary to the Members of the College in those days

The book itself possessed a lengthy title "A Physical Directory or a Translation of the Dispensatory made by the Colledg of Physitians of London, and by them imposed upon all the Apothecaries of England to make up their medicines by This book was printed by Peter Cole, at the sign of the Printing Press in Cornhill, near the Royal Exchange

J Mansel Recat

A

Physical Directory;

Or a Translation of the

DISPENSATORY

Made by the

COLLEDG of PHYSITIANS of

LONDON,

And by them imposed upon all the APOTHECARIES of ENGLAND to make up their *Medicines* by.

And in this *Third Edition* is added

A Key to Galen's *Method of Physick.*

Wherin is Three *Sethaut*

1 The first Section shewing the temperature of Medicines viz. *Hot, Cold, Moist* and Dry
Th second Section (in nine Chapters) treat of the Appropriation of Medicins to the several parts of the Body, viz. 1 *The Head* 2 *Brest* 3 *Heart* 4 *Stomach* 5 *Liver* 6 *Spleen* 7 *Reins* and *Bladder* 8 *Womb* 9 *Joynts.*

2 The third Section (in 24 Chapters) sheweth the Propert es or Operations of Medicines 1 *Evacuating* 2 *Hardning*, 3 *Loosning*, 4 *Making thick and thin* 5 *Opening the Mouths of the Veins*, 6 *Attenuating* 7 *Drawing*, 8 *Distributing* 9 *Repelling* 10 *Ripening* 11 *Cooling*, 12 *Emplaistring* 13 *Supporting* 14 *Corroding* 15 *Provoking the Terms* 16 *Breeding* 17 *Killing worms* 18 *Seed*, 19 *Easing pain* 20 *Healing Sores* 21 *Glutinative*, 22 *Scarifying*, 23 *Resisting Poyson*, 24 *Adorning the Body*, 25 *Purging Medicins*

By *Nich. Culpeper*, Gent. Student in *Physick* and *Astrologie*.

Scire potestates Herbarum, usumque medendi
Maluit, & mirari (negligerim) *artes.* Virgil

LONDON

Printed by *Peter Cole*, at the sign of the Printing-Press in Cornhil, near the Royal Exchange. 1651

The Epistle [illegible] follows

' To the [illegible]

' The World [illegible] to [illegible] most Weavel [illegible] and the worst is found at the [illegible] *Boy* [illegible] note- a very pretty Fable The Sun and the *North* [illegible] [illegible] which was the strongest and they agreed together to try their strength upon a Passenger and he was to have the Victory that first caused the Passenger to put off his Cloak It was agreed upon and *Boreas* assaults the Passenger with a terrible Whirl wind The Passenger wraps his Cloak about him and travels apace and when the North wind had done his worst he gave way to the Sun The Sun shines upon the Passenger in full power then the Passenger was forced to lay off his Cloak and betake him to the shade The matter is not much what They Word was yet this I am sure is true, *The Light of the Sun* will shortly throw off *the Cloak of Ignorance* from people which the violent blasts of the Learned have so long involopted them with And indeed all the scrutiny of Man since the Fall hath been to look after the Happiness he lost in *Adam*, which is now so long agon, that he hath forgotten what it is much more how to get it And because all Man are not of one Temperament one seaks it in one way and another, another The *Epicureans* placed it in *Pleasure*, the *Phylosophers* in *Moral Vertues* and *Civility*, and amongst them few could agree what the *Summum Bonum* was The truth is, I could never find it in *Amen Corner*, neither do I believe any such Herb grows there in the *Alchymical Garden* You know who it was that said *You cannot serve God and Mammon* All divines hold the word *Mammon* signifies *Riches*, but the truth is, When they could not or durst not translate an Original word truly they give you the Original word in an English Character, which is the reason why 1 Zeph 4 they durst not translate the word CHEMARIM BLACKCOAT But indeed I have now nothing to do with such AS WEAR A ROUGH GARMENT TO DECEIVE I must go to the end of *Amen Corner*, and the truth is I pity the *Colledg of Physitians*, and I would exhort them too *That they would in this their day consider the things that belong to their Peace before it is hid from their Eyes* Do you think times of Knowledge will not come? or that People must live eternally in Ignorance, or if they do so (which is not very probable) must not you die as well as other Men? After death is there not a resurrection? Must not you answer before the great JEHOVAH the Lord JESUS CHRIST and all the ANGELS? Do you not know what became of the Man that hid his Talent in a Napkin *Bind him hand and foot etc* Must I send you to learn of the Heathens? Did not all the Grecian Physitians come once a year to the Temple of *Æsculapius*, and there register all the Cures they had done and by what means they did them, fairly written I do not persuade you to Idolatory, nor to worship *Æsculapius*, Gresham Colledg will serve the turn for the business of *Amen Corner* (but that the Gate is usually kept shut) The Heathen shall rise up in Judgment against you and condemn you For had they dealt so basely with you, as you have done with this

Nature and thy own skill in Physick might have been written in the inside of [illegible] Colledg Colledg thou art Diseased, and I will tell thee the *Cause* [illegible] *sticks*, and *Prognostick of thy Disease* The *Cause* is *Mammon* *Cornelius Agrippa* affirms *Mammon* to be the Prince of the Temptinq Devils, and that shews *Riches* to be the greatest temptors to evil that is And yet 'tis some question whether your Disease be *Simple* or *Compound* You carry with you the sin of your first Father *Adam* you would be little *God almightines* and have your Wives *Goddesses* if you will not believe me Take notice if the first sin incident to a Child be not Pride and that is inherent in your Bones And such corrupt Principles will be baseness in the middle and bitterness in the latter end

"The *Diagnosticks* are these *Ipse dixit* seven miles about *London* Lay him in Prison five pound a Month for practising Physick unless he be a Collegiate, Make a couple of Crutches of the *Apothecaries* and *Chyrurgions* Be as proud as *Lucifer* Ride in state with a *Footcloth*, Love the sight of *Angels*, *Cheat* the *Rich* *Neglect* the *Poor* Do nothing without *Money* Be *self conceited*, Be *angry* for *Impedit ira animum ne possit cernere verum*, Be Witless and so die

"The *Prognosticks* are these *Pride goeth before a Fall, and a haughty mind before destruction* *Seest thou a Man that is wise in his own eyes, there is more hope of a Fool than of him* *Though you may bray a Fool in a Morter, his Folly will not depart from him*

"The *Cure* *Fear God* *Love the Saints* *Do Good to All* *Hide not your Talent in a Napkin* *Be Studious* *Hate Covetousness* *Regard the Poor* Know you are *English Men*, and upon *your Throne*, As a King ought to regard his *Subjects*, so ought you the Health of all *English People* Be *Honest* Be *Careful* You profess yourselves to be a Colledg of Doctors *Doctor* comes of *Docco* to Teach *Be Teachers* Take these for Simples

As for *Compounds* *Take* an *ounce of Honesty, half an ounce of fair dealing* Mix them together with a little *Oyl of Publick Spirit*, and lay it to your *Heart*

Take of *Leaves of Conscience* (if the wind have not blown them away) Mix of the *Roots of an Honest Hart* Mass Boyl them in a Pottle of *Publick good* while *Experience* witnesseth it is boyled enough and drink it every morning next your *Heart*

"Take *your Hands full of Honesty*, *your Heads full of Righteousness*, and *your Hearts full of Love to the Poor* *and do some good to your Country for Conscience sake*

"Take of the *Herb of the Trinity* Mass *Hleluyah*, Lib *Ointment of the Apostles* one ounce, *Emplastrum Diapium*, one dram, *Emplastrum Sanctum*, half a dram Look upon the Names and use them accordingly, for your own goods

"And now at last (to let you Blasphomies and my own Medicines alone) I seriously advise you to consider what will become of your souls another day How will you answer for the Lives of those poor people that

have been [illegible] your abecoming [illegible] them in their Mother Tongue [illegible] a Colledg of [illegible]' Do you know what belongs to your Duty or not? Whether [illegible] *Harry* the Eighth give you your Charter' to bide the Knowledg of Physick from his Subjects yea, or no' Do you think you shal be called to an account for all you have done? I would have said for what you have left undone Is not omission of good as great a sin as commission of evil? Look to it, look to it For (as the Lord lives) I pity you, may weep for you too I tell you truly (and I am not ashamed of what I tell you) God hath given you what you desire you are a Colledg of Physitians, You have the Honor and Command, Learn to know your selves; Remember a Grecian whose Motto was γνωθι σεαυτον He was a wise Man! Learn you to be so before your final *Catastrophe* you must die and after death comes the Judgment Blame me not for writing thus bluntly to you! I was born a Gentleman and cannot flatter, neither wil I you. Do not think that I delight to oppose you, if you do you are mistaken. Conscience dictated a few visions to my eyes which were not supernatural All the sick People in *England* presented themselves before me, and told me, They had Herbs in their Gardens that might cure them, but knew not the Vertues of them They praid me (for Gods sake and as I would answer it another day) that I would help them for the *Colledg of Physitians* were so *Proud* so *Surly* and so *Covetous*, that *Hoursly went a begging in Amen Corner, and could find no entertainment* I did not ask what I should *get by the Bargain*, neither did I see a vision of *Angels*, I saw Ancient people coming to me sick, and coughing and crying out, for the Lords sake help us I saw yong Children (even those that are unborn) desiring me to give them the grounds of Physick in their Mother Tongue, I thought good to give you notice of it (and if you wil not do it, I will) At your hands shall be required another day the lives of all those that have perished through ignorance of what Remedies might probably have saved their lives *The Lord is good to all and His tender Mercies are over all His Works* But why are you good to none! Is not GOD IMPESSE, GOD LIKENESS? Do not outface God, He is above you, and wil call you to an account when your iniquities are full

"Lastly Do not harbour such a thought in your Brain, as to think I am your Foe Do but follow my Advice, and you shall find me your Friend Neither am I ashamed of my Name, for I am called

"NICH CULPEPER'

Following the Epistle Dedicatory is a paragraph as followe —

"To the Reader

'Courteous Reader, Will you be but pleased to peruse this Third Edition which (although happily it may not be so well as I could wish it) yet take notice, That I am sickly, If God accept the Will for the Deed, why should not Man? In doing this I have not done less than nothing for (if such a thing can be) that belongs to the Colledg God forbid I

should wrong them of their due I told you before I am not in health, and do not think that I should write you a large Epistle Prais the Book as you find it If it be well done Give God the Glory If weakly done, tis like my self If I cannot do you the good I desire I wish I could Pray for me, and happily I may do it hereafter Pure pity to you, was the Motive the prevailing Argument that made do what I have done If you want more knowledge, you know whether to go for it, even to him that gives to all man liberally, and upbraids no man Or if you are minded to go to the Colledg of Physitians, you may But be sure you carry Money with you for *Balaams Ass will not speak unless he see an Angel Pardon me if I leave off abruptly* Only take notice that I am still and during life shall remain, Yours whilst my own,

' Nich Culpeper

THE EARLY HISTORY OF PLYMOUTH HOSPITAL

Obtained from Admiralty Records Documents and Local Records

Communicated by Captain A Bedford M B E R N (Retd)

(*Continued from p* 151)

Police—

In early days and until some time in 1850 a Subaltern s Guard of Royal Marines was posted at Plymouth Hospital The principal duty of this guard was to prevent desertions In 1854, or thereabouts the Lords Commissioners of the Admiralty thought fit to order the organization of a Police Force for Plymouth Hospital to consist of 3 sergeants and 15 constables The Lieutenant on duty for the day performed the duty of Director of Police

The Police were sworn in as Special Constables by the Captain Superintendant and the form of oath was —

"I do swear that I will well and truly serve our Sovereign Lady the Queen in the Office of Special Constable for Her Majesty s Royal Naval Hospital at Plymouth, without favour or affection, malice or ill-will and that I will to the best of my power cause the peace to be kept and all Her Majesty s Stores and property to be preserved from depredation and plunder, and that I will prevent all offences against the persons and properties of Her Majesty s Subjects in the said hospital, and that while I continue to hold the said office I will to the best of my skill and knowledge, discharge all the duties thereof faithfully and well according to Law

So help me God

Sworn before me at the Royal Naval Hospital, Plymouth,
this ——— day of ——— 185

" Captain Superintendant

[illegible] were lodged in the building previously occupied as a Guard House which was appropriated as a Police Station The Force was divided into three divisions each containing one Sergeant and five constables Two divisions were always on duty and one off duty The stations were the Inner and Outer Gates Quadrangle Grounds and Jetty

The Police orders referred to the prevention of improper conduct and to prevent the smuggling of spirits &c over the walls They were instructed to use the utmost diligence to prevent the desertion of patients They were not to permit the patients to lie upon the wet grass, but to order them under cover should it rain

It was apparently an armed force, as one instruction states :—

"The Sergeant and constables will be armed in such a manner as The Lords Commissioners of the Admiralty shall direct, and they will also be instructed as Artillerymen, but on ordinary occasions they will only carry their constable's staff

The Director was responsible for the general conduct and good order of the Force and he was expected to make himself acquainted with their characters and take care that they did not form false notions of their duty and power

The general instructions for the Police were similar to many orders of the present day, but there appeared to be some kind of reward given for services rendered, as it states in the orders for the Constable of Police —

"For his exertions upon these and other occasions the Captain Superintendent may recommend him to The Lords Commissioners of the Admiralty for a reward

The general conduct and bearing of the Force was regarded as of some importance judging by the following extract —

"He must bear in mind that there is no qualification more indispensable to a person in his situation than a perfect command of temper, never suffering himself to be moved in the slightest degree by any language or threat that may be used He will do his duty in a quiet and determined manner but in doing so, he is to be civil and attentive to all persons of every rank and class as no insolence or incivility will be passed over

What a Man !

A similar Force was organized for Haslar Hospital, and there, certain roads and pathways patrolled by the Police were used by the general public as a reference is made to the closing of thoroughfares

"The Director will twice a year, January 1st and July 1st or as soon after as convenient close all suffrance roads and pathways for the space of one hour to prevent the said thoroughfares becoming a right

"The villagers of Clay Hall having been permitted to draw water from the well in the field behind the Terrace, the gate thereof is also to be closed twice a year for the same purpose

I have not been able to locate the date when this Police force ceased to exist, but the Metropolitan Police were employed in His Majesty's Naval Establishments pursuant to the 'Act 23 & 24 Vict C 135' which would be about 1864 that being the date when general instructions for police of H M Naval and Military Establishments were issued The Metropolitan Police remained until 1919 when they were partially replaced by Civil Warders On July 1, 1927 the remaining members of the Metropolitan Police were withdrawn from Plymouth Hospital and all police duties were taken over by the warders, who were designated Admiralty Civil Police

Thus history repeats itself

The various police bodies also formed the Fire Brigade and in early days lent assistance to the Civil Authorities when fires occurred adjacent to the precincts of the hospital The old manual engines were disposed of about 1923 as with a plentiful supply of hydrants both inside and outside of the hospital these engines were no longer necessary Besides dockyard engines are now available and could arrive quicker than it would take to get the manuals from the sheds and working

To conclude this series of articles I will refer to the alterations and additions made to the hospital since it was built

In 1808 the Laundry was built A re construction of the mangling and work-rooms took place in 1899

The Mortuary Chapel was added in 1868

In 1883 a Church was built inside the hospital grounds and dedicated to 'The Good Shepherd' It has accommodation for 288 The interior was very plain and rather gloomy, but in 1929 a scheme for decorating and beautifying was put forward by the Chaplain the Rev G W Tibbs and approved. At the same time a two-light window of stained glass showing the scene of "The Supper at Emmaus" with ornamental frame work, &c, the gift of a grateful patient was unveiled and the Church has now a very pleasing and brighter appearance augmented by improved lighting

Disinfectors were installed in 1892 and the re construction of the Operating Theatre was effected between 1898 and 1904

During the period 1900 to 1906, nine of the blocks were re-constructed fireproof floors put in and sanitary annexes built which contain baths for each ward

Prior to 1900 there was no separate accommodation for officers or for cases of infectious diseases In that year an Officers Block was built containing two floors, on vacant ground at the east end of the hospital and well away from the main buildings A zymotic hospital was also built consisting of four small blocks accommodating fifty patients with a pavilion for the Staff

Two new blocks were constructed between 1900 and 1901 one being quarters for Sisters and the other a Dispensary and Medical Store

In 1902 residences were constructed for the Superintending Pharmacist and Warrant Wardmaster

[illegible] mental patients and offenders was [illegible]

Electricity superseded [illegible] illuminant in 1906

Open air huts for patients suffering from tuberculosis were built in 1908

A system of telephonic inter-communication was installed in 1912, but was never satisfactory This was replaced by an automatic system in 1923

Lift towers with electric lifts for all blocks were built in 1912-1913

New quarters for the sick berth staff were completed and opened in 1926 These quarters only provide messing and recreational accommodation at present, but it is hoped that sleeping quarters will be added in the near future

A solarium was added in 1931 on the verandah of the surgical side part of the roof is of vita-glass and patients in this section during the summer months have derived great benefit

There are two recreation huts for patients built during the war period, one for billiards &c , and the other for reading and writing

Wireless was installed in 1928 with headphones in all wards and loud speakers at other points there is also a microphone by which the hospital Sunday service is broadcast to the wards

Other minor improvements have been effected from time to time

Thus we have a Hospital of old grey buildings of the eighteenth century with a sprinkling of the modern twentieth century type Most of the spare ground is occupied by these additions and there is now little accommodation in which patients can indulge in recreation

At the present time 'C' Pavilion is being re constructed to house the X-ray Department and Medical Library On completion of this work the interior of Trafalgar Block is to be remodelled, a piece of work long overdue It will contain the Laboratory Administrative Offices Survey Room and a Concert Room for patients and will certainly be a great improvement

One of the zymotic blocks is being altered to contain eight cubicles so that various types of infectious diseases can be dealt with in one block When this is completed Chatham Haslar and Plymouth Hospitals will be alike in this respect

In conclusion I should like to express the hope that this somewhat patchy history has not been without interest to readers especially those who have at some time during their Service career, served at Plymouth Hospital

Clinical Notes

FIVE CASES OF ACUTE INTESTINAL OBSTRUCTION

By Surgeon Captain H. M. Whelan, R.N.
and
Surgeon Commander J. V. Maxwell-Scott, R.N.

Case 1.—L. R., aged 71.

The patient was visited at the request of his own medical adviser on March 3, on account of chronic intestinal obstructive symptoms which were becoming acute. There was a previous history of operation in 1916 for perforated gastric ulcer and for intestinal obstruction in 1932 and again in 1933.

As a result of his original laparotomy in 1916 the patient had an abdominal hernia and in both operations for obstruction subsequently the cause was considered to be partial strangulation of small intestine in this area and the fact that the symptoms were relieved as soon as drainage allowed free passage of feces and flatus confirmed this view. As the fistulæ of the enterostomies closed the patient was discharged to duty apparently fit on each occasion.

On admission late p.m. on March 2 he had not passed feces for two days but flatus had been passed. There was slight discomfort but very little distension of the abdomen. An enema was given without result. In view of the long history of chronic obstruction the case was not considered one of urgency from the point of view of immediate operation. By 0900 the following morning however there was marked distension of the abdomen and obstruction had become complete. Immediate laparotomy was performed.

The abdomen was found to contain coils of very distended intestine particularly the ileum and the ascending and transverse colon. A Paul's tube was inserted into the cæcum through which a very great quantity of foul smelling liquid faces immediately drained. This did not however relieve the gas distension of the transverse colon, so a large catheter was inserted and sutured *in situ*. Owing to the condition of the patient it was not considered advisable to continue the search for the actual obstruction, particularly as the artificial drainage appeared to be well above the obstruction.

The patient survived until March 5 but in spite of the apparently free drainage of the intestinal canal the abdomen again became very distended. He also had several small attacks of hæmatemesis. On March 5 at 1130 there was a very brisk hæmorrhage from the stomach and patient suddenly collapsed and died.

Post mortem revealed a schirrous carcinoma of the junction of sigmoid and rectum which completely occluded the bowel. The hæmatemesis was accounted for by numerous eroded areas in the stomach mucosa. The immediate vicinity of the Paul's tube and catheter had been well drained but the distension was accounted for by general ileus.

Case 2.—F. W. G., aged 40.

The patient was admitted to R.N. Hospital, Chatham, on April 24, 1935, with the following history:—

In 1933 while serving in Iraq he had frequent attacks of diarrhœa with blood and mucus in the stools. On return to England he had a severe attack of a milder nature in October, 1934, and was admitted to R.N. Hospital, Chatham. Examination of stools revealed "several quite typical *E. histolytica* cysts." He

was treated with en[illegible] improved as to be discharged to sick leave and then to duty on [illegible] 1934. During this period occult blood was found on numerous occa[illegible] in the stools

On readmission on April [illegible] 1935, he complained that, after a month at duty, the symptoms gradually returned, the stools became loose there was continual discomfort in the abdomen and he noticed blood in his stools



On examination a very definite tumour could be felt in the right iliac fossa. The tumour was hard and oval in shape freely movable and not very tender on pressure. Patient looked ill tongue was dirty and there was a very marked sallow tinge to the skin. In view of the history the tumour was thought to be a mass of mesenteric glands with possible localized abscess formation, and a laparotomy was decided upon. This was done on April 25 by a right paramedial incision below the umbilicus. On opening the abdomen a large tumour was found in connection with the last part of the ileum which was easily delivered

into the wound and packed off On exploration a grave state of affairs was revealed The tumour consisted of the ileum except an about 2 to 3 inches long attached to which was a large tumour mass could be felt through the wall of the intestine The gut above the tumour was collapsed and comparatively normal while the part below which consisted of about a foot of ileum before the ileo cæcal valve was immensely dilated hypertrophied and edematous the ascending colon and cæcum were again comparatively normal No amount of manipulation would reduce the intussusception, so it was decided to resect the mass *en bloc* This was done The end of the proximal portion of ileum was closed, as also was the stump of the ileum, left attached to the cæcum A lateral anastomosis was then performed between the ileum and ascending colon about 4 inches beyond the ileo cæcal valve

The attached rough illustrations explain the condition before and after the operation As will be seen from the illustration rather a large portion of ileum was left attached to the cæcum, which it is quite realised may be a source of future trouble At the time of the operation this portion of the ileum was so hypertrophied, inflamed and œdematous that it was not considered advisable to resect it and subsequently close the gut at a point too close to the ileo cæcal valve It is hoped that now the primary cause has been removed the gut will shrink to its normal size and that peristalsis, which is in the right direction, will keep this added diverticulum empty

The abdomen was closed without drainage Recovery was uneventful except for a muscle plane infection which resulted in a localized superficial collection of pus on the ninth day after operation This was opened and drained Bowels were open naturally on the third day without enemata and have been freely and regularly open since In fact, there has been a tendency to looseness

His general health improved rapidly the appetite was good, and the sallowness entirely disappeared

The pathological report of the tumour showed it to be a leiomyosarcoma This is a rare type at any rate when only locally invasive, but sections suggested that excision had been wide enough to offer a good hope of cure

Although this case is included under a general heading of obstruction in the true sense he had no obstructive symptoms at all in fact diarrhœa was his chief complaint On the other hand anatomically and mechanically this was a case of chronic obstruction which no doubt would have become acute, as soon as the tumour filled the lumen of the ileum sufficiently to prevent the passage of fæces As it was, his symptoms were due to the peristaltic act on of the gut in trying to pass the tumour, which being attached was gradually pulling more and more ileum with it into the dilated distal portion and causing the intussusception In other words the tumour was becoming a ball valve which would have eventually become closed completely if the intussusception did not cause acute symptoms before it reached the ileo cæcal valve through which it could not pass

Case C—G P, aged 20

From this man who had no history of previous abdominal disease a very acute appendix with gangrenous mucous membrane was removed through a grid iron incision on December 13, 1934

The appendix was wrapped in an omental cap which was ligatured and amputated The omentum was transfixed and ligatured *en masse* leaving a stump about the size of a walnut There was no free fluid or pus in the peritoneal cavity The wound was not drained The patient was allowed up on the eleventh day and convalescence was normal until the thirteenth day when he complained of epigastric pain and vomited some undigested food His bowels had given no trouble and moved naturally on this day The attack passed off and no further symptoms occurred until the seventeenth day

O[illegible] in the morn[illegible] large the [illegible] other attack [illegible] He had [illegible] the day before During the night he vo[illegible] the eighteenth day the abdomen seemed [illegible] pulse 76 An enema given was return[illegible] performed

The [illegible] remarkable considering that the [illegible] before There was much clear [illegible] distension of the presenting small gut [illegible] was found to be due to —

(1) All[illegible] omentum across the terminal coil [illegible] mesentery

(2) A [illegible] terminal coil of ileum to the lateral wall [illegible]

B[illegible] of the obstruction achieved The abdom[illegible] and convalescence was satisfactory

From [illegible] —

(a) Th[illegible] putating over a small area of omentum en masse [illegible] though [illegible] without disaster It is probable that cut omentum ligatured [illegible] less likely to be forced by peristaltic movements into a [illegible] attempt to peritonize such cut surfaces is also [illegible]

(b) The [illegible] which dangerous obstruction develops with but slight [illegible]

[illegible]

H[illegible] abdominal history was admitted p m on [illegible] and colicky abdominal pain which had [illegible] him up He had not vomited bowels [illegible] not look ill Temperature 99 F, pulse 88

[illegible] was lax and [illegible] There was only deep tenderness in the [illegible] below the umbilicus without rigidity There was, however, very slight [illegible] distension on careful inspection Except for a leucocytosis of 22,000 there [illegible] no other symptoms

An enema was given at 1800 but was returned clear This increased suspicion and when a second an hour later was again returned only stained, immediate laparotomy was decided upon

It may be said that in operating there was almost the feeling of interfering without sufficient justification so slight were the symptoms

At 2100 the abdomen was opened There were found —

(1) Multiple strictures of the small gut by evident tuberculous ulceration

(2) An intussusception 4 in long about 6 ft from the ileocaecal valve This intussusception was very recent and reduced easily leaving the gut quite viable When reduced, however the particular ulcer which had provoked it was found to be much indurated and to have narrowed the lumen of the gut beyond the limit of safety Lateral anastomosis between the parts of ileum leading to and from this stricture was accordingly performed This seemed to (a) restore an adequate lumen and (b) prevent recurrence of the intussusception

The abdomen was closed without drainage and the patient made an uneventful recovery from the immediate catastrophe

He was found however during convalescence to have pulmonary tuberculosis in addition to the abdominal ulceration

This case also illustrates the extraordinary quick and symptomless development [illegible] obstruction

Case I.—[illegible]

[illegible] limited [illegible] to 2000 [illegible] fore [illegible] for appendicitis [illegible] for obstruction [illegible] to adhesions [illegible] the latter date he had [illegible] quite well and [illegible] recruited for the Army in 1915.

On admission he complained only of a dull ache in the lower abdomen. His tongue was coated and he looked rather pinched. Temperature normal pulse 100. He was put to bed at once, and was found to have no abdominal tenderness or resistance. There was slight distension without rigidity and no enema produced no result. Leucocytosis was 20,000. In view of his previous history laparotomy was at once undertaken for acute obstruction.

Through a right paramedian incision below the umbilicus avoiding previous scars, the abdomen was opened and free serous fluid in large quantity loculed. The small intestine was greatly engorged and distended. There were multiple adhesions all over the abdomen. The main critical obstruction was found to be at the lower end of the jejunum where a recent old standing and very thick band was associated with much narrowing of the lumen of the gut. When divided and freed, the stricture was still almost impermeable, so lateral anastomosis was performed between the afferent and efferent loops of small intestine. A pint of hot saline was poured into the abdomen to combat shock and the wound closed without drainage.

Antipneumococcic serum was given on three occasions during the next twenty four hours and gastric lavage carried out on the second morning after operation to evacuate foul contents from the stomach. Both these measures seemed to affect favourably the progress of the case, which made a satisfactory convalescence. A muscle plane infection occurred but healed quickly after evacuation of a local collection of pus on the fifth day. He quickly regained his normal fitness, putting on weight and having no further obstruction or constipation while in hospital.

On discharge he was surveyed and invalided from the Army on account of the history of recurrent obstruction and the possibility of recurrence.

* * * * *

These five cases are published not only for their own intrinsic interest but also for the moral to be drawn from them. It is that the moment *suspicion* of acute obstruction is seriously established, immediate laparotomy is imperative.

In all these cases the fullness of the symptoms was out of all proportion to the disaster actual and potential which were found inside the abdomen. In four out of five the symptoms were relieved and the abdomen closed without misgivings as to the viability of the gut, toxæmia had been forestalled, and convalescence assured.

Even in Case A, in which acute obstruction supervened on an old standing malignant stricture, earlier operation would probably have postponed the final catastrophe for a considerable time.

A second interesting point is that Case D, a case of tuberculous intussusception in which no serious disease was suspected by the patient or anyone else until the abdomen had to be opened for the acute catastrophe, is the third case of latent and almost symptomless abdominal tuberculosis seen in this hospital during the last six months.

For the illustration to Case B we are indebted to Sick Berth Attendant C. Barnes, of R.N. Hospital Chatham.

A CASE OF ARSENICAL POISONING FOLLOWING INTRAVENOUS MEDICATION FOR SYPHILIS

By Surgeon Lieutenant J A PAGE M B B Ch R N

On [illegible], 1931 W T aged 32, reported to me with a penile sore which [illegible] syphilitic by S P test As his ship was due to sail within a few days he was transferred to Sick Quarters on shore for accommodation and treatment

He received a course of N A B (May and Baker), commencing with 0·45 gram twice weekly until 0·9 gram were given followed by a course of bismuth (Casbis) which was completed on September 9 After an interval of two months from the completion of the first course of arsenical treatment I decided to give a second course Th was commenced on September 27, in the Sick Quarters, using Bayer's neosalvarsan in the iso double ampoules starting with 0·45 gram Injection of 0·45 gram was given on September 27 and October 2 without any ill effect the patient showing no idiosyncrasy or undue reaction whatever I also commenced a second course of Casbis on September 30 Apart from his condition the patient was in excellent health and carried on his usual work each day

On October 8 at 0930 I gave the third dose of neosalvarsan and immediately following it he complained of dyspnœa and faintness and an urgent desire to vomit Copious vomiting and diarrhœa commenced immediately The patient turned very pale and became cyanosed about the lips M vin adrenalin hydrochloride m v gtt was followed by camphor in oil 1 c c and ether m xx He was seen by Surgeon Commander A G Bee who agreed with my treatment and suggested [illegible] Dr Falkiner Browne the civilian V D specialist with a view to having the patient transferred to hospital and also to suggest any further line of treatment Dr Falkiner Browne was of the opinion that he would rapidly recover as these cases sometimes occur but are usually all right within half an hour or so and suggested a further dose of M v adrenalin about an hour after the first This was given with morphine sulph gr ¼ to allay the extreme restlessness and a slight improvement took place He still continued to vomit and have painful diarrhœa and severe burning abdominal pain He never lost consciousness but his condition still appeared extremely grave and arrangements were made to have him transferred to hospital He then vomited blood, and passed blood and mucus per rectum without any trace of fæcal matter, in short, he showed all the symptoms and signs of acute arsenical poisoning I accompanied him to hospital where he was admitted at 1300 Further treatment consisted of intravenous saline and sod thiosulphate He collapsed and died at 2120 the same evening

Post mortem findings verified the diagnosis of acute arsenical poisoning —

Heart 15 oz Some hypertrophy of the left ventricle Both ventricles dilated Slight opacity of the heart surface Large hæmorrhages under the endocardium of both ventricles especially of the left side Heart muscle was almost purple in tint Valves and coronary arteries healthy

Aorta Healthy

Lungs Pleuræ free Congested

Liver Normal size Slight toxic changes as shown by areas of slight yellow tinting

Spleen Normal

Pancreas Very soft and doughy congested

Stomach Contained dark fluid The lining was practically black in colour, from hæmorrhage into it

Intestine There was diffused hæmorrhage into the lining of the whole length

(1) the small and large intestine and a quantity of fluid (1 to 1 [illegible] in its contents

Adrenals, kidneys, bladder, brain showed no abnormality

These cases are fortunately rare and very few similar cases are to be found in the literature

One rather similar case is reported in which a girl aged 26 showed evidence of hæmorrhagic purpura vasomotor disturbance dyspnœa and hemiplegia and died some hours after the injection She had shown no evidence of hypersensitiveness to arsenic and no reaction during two previous courses of the same drug [1]

Such symptoms are said to occur in about 1 in 5 000 to 1 in 10 000 cases [2] and constitute a risk that is unavoidably run in view of the fact that no indication that a reaction will follow is perceptible on clinical examination The reaction is due to an unusual susceptibility to arsenic

The ampoule that was used for the injection of the dose in question was one of a batch which had been recently purchased One course had been given to another patient and two previous injections given to the deceased from the same batch The ampoule containing a drop of residual solution and a fellow from the same batch were tested and revealed no abnormality

The finding of the Coroner's Court was that "Death was due to acute arsenical poisoning following the injection of neosalvarsan necessarily properly and correctly given for the treatment of syphilitic infection

I report this case on account of (*a*) The unusual merits of the case and the infrequency of such an occurrence (*b*) The dramatic suddenness of onset of symptoms of acute poisoning following the injection of 0·45 gram neosalvarsan in a patient undergoing a second course of treatment who had shown no previous idiosyncrasy (*c*) The rapidly fatal termination

REFERENCES

[1] Dermatology and Syphilology Year Book 1933
[2] Report of Salvarsan Research Council 1923 (H M Stationery Office)

Reviews.

Researches Published from the Wards and Laboratories of the London Hospital during 1934 By Various Authors 1935 H K Lewis and Co Ltd 136, Gower Street W C 1 Price 7s 6d net

This volume covers a wide and varied field It is a compilation of all the written work published by the staff of the London Hospital in the weekly journals and quarterly periodicals during the year 1934 All branches of medicine are represented—clinical medicine, surgery, neurology, and pathology but perhaps the most striking contributions are in the region of endocrinology and the accompanying biochemical resolutions Names like Aitken, Byrom Bramwell, Ellis Leyton, and Russell speak for themselves The articles dealing with the fluid balance of the body are full of suggestive thought, and are especially stressed as worthy of careful study

Brain and Cairns are both practical and informative in their respective provinces of neurology Acute varieties of retrobulbar neuritis is a much needed analysis and Cairns is trenchant on the diagnosis and treatment of tumours of the brain

Parkinson and Clifford Hoyle deal with cardiology Thyro toxic hypertension and the research on the angina of effort both repay sustained attention

Walton writes on failures in gastric surgery, and Souttar describes a case of

[illegible] by proximal ligature.

In the [illegible] Drake, Mierke and Skippen jointly [illegible] mechanical [illegible] community, whilst Loewenthal describes [illegible] recent streptococci.

Such [illegible] active minds who administer the [illegible] Hospital [illegible] in the collection. But the whole [illegible] high standard [illegible] it the wise establishment. As each [illegible] light in the [illegible] thought, speculation and research, the whole [illegible] takes a [illegible] This serves a book in every department which [illegible] by [illegible] to [illegible] Service.

A NEW ANGLE ON HEALTH. By Surgeon Captain D. H. C. Gibson, M.D., D.P.H., D.T.M. & H., R.N. (Retd.). First edition. 1936. London: John Bale, Sons and Danielsson, Ltd. 8×9½. Great Tichfield Street, London, W.1. Pp. 160, with 7 illustrations and 30 diagrams and figures and statistical tables. Price 7s. 6d. net.

Surgeon Captain Gibson in publishing his book "A New Angle on Health" attempts to formulate and explain "Nature's Provision for the Health and Happiness of Mankind." He has produced a book which as Sir Reginald Bond—*vaticinator ubique vanus est*—prophesies in his foreword certainly invites criticism. The task of the reviewer is not an easy one for the author has included in his work subject matter dealing not only with medicine itself but also with vital statistics, biology, class distinctions, political economy, ancient history, and Holy Writ.

His views are drawn from his experiences as a Medical Officer of the Royal Navy more especially from those gathered during his eight years service at H.M. Naval Base at Singapore.

Briefly, the book is an indictment of modern civilization, especially of "Industrialism," and a glorification of the simple agricultural life and of the cult of "social service" which has been exalted in recent years to the status of a religion in itself. The first chapter of the book is devoted to a Biological Review in which the author regards "Nature" as a "Kingdom of Harmonious Whole" much like the girl of the melodrama, always seems to be taking the wrong turning and is the only discordant element. This Kingdom is assumed to be governed by three great laws, namely, the Moral Code regarded as the most important, Physical Laws and Sanitation which latter includes a knowledge of natural history and bacteriology.

The author expresses his conviction that the diseases of "primitive man" are due, solely, to neglect of the Law of Sanitation while the causes of ill health in civilized races can all be traced to breaches of the Moral Code, and, in their turn these originate from money.

The modern industrial system, estimated to date from A.D. 1760, is considered responsible for the production of most of the troubles of humanity, one class of the community being "parasitic" upon the others and thereby prone to develop "diseases of parasitism" by which term the author classifies those morbid conditions associated with excessive intake of food deficient in quality, and with inadequate physical work.

It is not very easy to gather which particular section of the community is the parasite and which the host in fact paradoxically enough, the manual worker of to-day is regarded as both host and parasite. The author does not seem to have taken into consideration the possibility that different classes of the community may flourish in a state of commensalism or of symbiosis instead of being always mutually antagonistic.

The diseases of civilization are then defined and are classified into three groups:—Respiratory, which includes infectious diseases, rheumatic fever, and

heart disease Digestive Nutrition in which dental disease is one of the component elements and Locomotor, which comprehends degenerative disorders of the circulatory system and of the joints and muscles It is here that the author's style becomes so controversial for he now definitely asserts that the host of maladies comprised under these headings are scarcely represented in the physical record of the primitive Asiatic Very unfortunately, no definition of what the author understands by this term is given and indeed considering the geographical extent of the great continent and its almost innumerable races of mankind perhaps it is impossible to attempt it He appears to visualize however the new European labourers engaged at Singapore more especially the Chinese How ever this may be the relative immunity of the "primitive Asiatic" is ascribed to hard manual work and to regular simple fare which is supposed to ensure healthy digestion and that state of semi diarrhoea which is still lauded with indelicate insistency in the lay press as an essential of bodily health This may be true in the case of the Asiatic labourers presumably reasonably well paid and cared for at the Naval Base but these are not the only representatives of their race or races With regard to food Dr J Neil Leitch [1], in his very comprehensive and authoritative work on tropical dietaries says that rice forms the staple food of 400 000 000 Indians, Chinese Japanese and Malays and asks whether we are not justified in asserting that probably half of this number have never reaped the rewards of perfect manhood and womanhood through ill-balance of their dietaries After his preliminary survey the author proceeds to elaborate and define the basic requirements for the attainment and maintenance of health for which he enunciates a formula described as the recipe for good health This 'recipe' is compounded of three ingredients a *basis* of sound heritage from healthy stock, sound body building by a balanced diet exercise, fresh air and sunshine and last, a healthy environment Variations of this fundamental recipe are then formulated for the civilized manual worker and the rich employer and according to the different divergencies from the original 'recipe' diseases are grouped into those of Poverty and those of Riches The members of the learned professions by the way, are included in the class of the wealthy !

The 'recipe' for the primitive Asiatic assumes that this prototype has a sound health heritage, that his diet is perfect and that his amount of physical exercise of fresh air and sunshine are ideal It seems indeed a return to the myth of the noble savage and the following words of the writer quoted above [2] seem very appropriate "We find writers in England and America extolling the simple life of primitive savages, telling us that such people avoid many of the diseases that we are prone to and in short holding up their dietary as worthy of our emulation The idyllic life of the savage is a myth his supposed freedom from disease is merely apparent and is dependent on his distance from facilities for a thorough investigation his life, in fact is a miserable struggle for existence and civilized man after so many painful ages of progress should have found a worthier example to follow Some even suggest that we should allow our supposed simian ancestors to be our guide in dietetics but if in those, why not in other ways of living?

The respiratory group of diseases including tuberculosis are classed as Diseases of Poverty and the author holds that the Asiatic is practically immune from these afflictions He states that Arabics living in England Chinese Siamese Indians, as well as Egyptians, are invariably immune from colds and influenza This is directly opposite to the reviewer's personal experiences In this connection investigations at the Medical School at Singapore by Dr Rosedale Professor of Biochemistry and Dr J Argyll Campbell showed that some typical Malayan diets produced lowered resistance to lung troubles the incidence of lobar pneumonia is very high and there is a case mortality of over 60 per cent

To quote another authority on the same subject [3] "Tuberculosis is

without any [illegible] of teeth more prevalent and more fatal among the Chinese than it is in Europe or America. It is the great human plague and no race or colour has any claim to exclusiveness in predisposition thereto. There is not a single section on the map of China that does not report tuberculosis in the most emphatic and strenuous terms.

The excessive consumption of sugar and of refined carbohydrates, to which the tentative title of 'Saccharism' is given is held to be a new element in the aggravation of the diseases of Parasitism and by statistics and diagrams the author concludes that the greater the consumption of sugar in a nation the worse are its teeth, the higher its cancer mortality and the greater its proportion of surgical specialists. Surely the statement on p. 31—that 'sugar is an alcohol'—must be a *lapsus calami*!

The author then proceeds to give a short account of his experiences at Singapore and pays a well deserved tribute to the magnificent work of the Rockefeller Foundation Hookworm Organization, but he considers that the most important effect of this great campaign against ankylostomiasis is the peace and goodwill among men, races and nations achieved by it. He gives a brief description couched in simple language of the life histories of the hookworm and of the malaria parasite and a very short outline of mosquito control.

No particular lessons are drawn from the application of the principles of health promotion except that "health and disease are but parts of one subject, Life" and that in order to keep in good health man must live in harmony with his neighbours both great and small, more particularly the very small, whereas the reviewer would suggest that it is by the relentless waging of incessant war upon the *anopheles* mosquito the tsetse fly, the tick the louse and other insect vectors of disease that healthy conditions will be obtained in the tropics.

In chapters on Social Distinctions, the Healthiest Occupations and the National Physical Standard the author further elaborates his thesis of the diseases of Poverty and the diseases of Riches and concludes that the conditions of society are being undermined and destroyed by the "devil God Money". Agricultural labour is shown by statistics to be the healthiest of all occupations, and, although the farm hand is to day suffering from dietetic deficits due to the introduction of refined foods he still has great advantages over the industrial worker. This class also shows the least decline in fertility. Can this possibly be due to an abundant supply of fat soluble vitamin E in their diet?

> We'll double the birth rate yet my dears
> If we all eat Vitamin E
> We can blast the hopes of Marie Stopes
> By taking it with cheese."[4]

It is, however on this question of fertility that the author's conclusions are undoubtedly sound both from the ethical and biological standpoints. He rightly emphasizes the fact that limitation of birth even if considered necessary for civilization is fatal to the race.

In a chapter entitled 'Biology and Empire' the author makes no secret of his intense admiration for China and the Chinese and quotes numerous extracts from 'The Letters of John Chinaman' by G. Lowes Dickinson eulogizing them to the disparagement of England and the English. Such comparisons seem particularly odious, and statements such as 'whatever is England is not urban is parasitic and moribund' are manifestly absurd. China's great 'success' is attributed in great part to her religion which, after all, is merely ancestor worship; yet to his final sentence the author stresses his conviction that the precepts of *Christianity* are the only basis of a healthy and happy life. In this connection the reviewer ventures to think that the author's excursions into theology would probably shock the orthodox Christian. His argument for the existence of God from design, is, of course, the well known Scholastic proof inherited from the

Greek philosophers, but his exegesis of passages of Scripture are unsound *'Nec tali auxilio nec his praecordiis'*

In conclusion, the author's thesis that agriculture is of paramount importance, and that the evils of industrialism are very real is perfectly sound, and no one will quarrel with his contention that many diseases of civilized man are caused or aggravated by self indulgence dietary or otherwise

Surgeon Captain Glyon has arrived at his conclusions through a new avenue of approach and many will find in this book, which is frankly of a controversial nature, much food for thought That this is so, is evident from a number of favourable opinions and criticisms from medical men, ministers of religion and journalists, printed at the beginning of the volume

REFERENCES

[1] Lauton J Neil M D F S Lond, M R C S, L R C P D T M & H F R I S D P H Dietetics in Warm Climates 1930

[2] *Ibid. Op cit*

[3] Jefferys W Hamilton A M M D and Maxwell J L M D Lond The Diseases of China, 1910

[4] — C H A *British Med Journ* February 18 1928

Amebiasis and Amebic Dysentery By Charles F Craig M D, M A (Hon Yale) F A C S Colonel United States Army (Retd) D S M Professor of Tropical Medicine and Head of the Department of Tropical Medicine School of Medicine Tulane University of Louisiana New Orleans, La First edition, 1934 London Baillière, Tindall and Cox Pp viii + 315, with 54 illustrations and 20 tables Price 23s 6d net

In this book the author summarises the results of his own and other recent work on the subject of Amebiasis and Amebic Dysentery He points out that important advances have been made in etiology, epidemiology prophylaxis and treatment of amebiasis, and, though a large amount of literature dealing with this subject has been published in research and medical journals, it is several years since a work devoted to the subject has appeared The book gives a very comprehensive study of the etiology epidemiology pathology, symptomatology complications diagnosis and treatment of the disease The author points out that it is only severe infection with *Entamoeba histolytica* which produces symptoms of clinical dysentery and that the vast majority of infections are not accompanied by dysentery or symptoms—that the virulence of the infection depends upon the resistance of the host and not upon the degree of virulence of the infecting strain of *E histolytica* that there are no "healthy carriers" of the organism, as all these so called "healthy carriers" show intestinal lesions of varying degree of intensity Stress is laid upon the importance of repeated examinations of the faeces in the diagnosis of chronic infection The technique of the complement deviation test is given and its value both in the diagnosis of chronic infection and in the determination of cure is discussed In the chapter on treatment, the relative values of ipecacuanha, emetine, emetine bismuth iodide stovarsol, treparsol carbarsone yatren vioform and other less well known drugs are considered The book contains lists of references to all the more important recent papers dealing with the subject, and is profusely illustrated, mostly by photomicrographs from the Army Medical Museum Washington

Some of these photomicrographs are excellent others such as figs 12 and 47, are inferior and might be omitted with advantage Again the multiplicity in the degrees of magnification in the photomicrographs illustrating the individual amœbæ and their cysts renders easy comparison of their relative size very difficult It is noted that figs 5 and 50 are exactly the same yet the magnification given for fig 5 is × 880, whilst that given for fig 50 is × 1600 It is noted that there is an error in Table II, the number of positive results from "Keloid and Swazy Students" University of California, should be 82 as stated on page 10, para 2

[redacted] Street Roe M R Ch B F R C S E late [redacted] Assistant Surgeon Edinburgh and H P Parlin M D [redacted] the Western Infirmary and Royal Hospital for Sick Children [redacted] Fourth Edition 1935 Edinburgh E and S Livingstone [redacted] 66 illustrations Price 10s 6d postage 6d

[redacted] edition of the fourth edition of this popular book has been undertaken by Dr [redacted] the whilst the chapter on local anæsthesia has been revised by W Quarry Wood, M D F R C S I Assistant Surgeon Edinburgh Royal Infirmary The original essential principles of the book remain and it has been brought up to date by including new methods and apparatus The authors have been wisely content to describe only the more important

The anæsthetics most in general use, other nitrous oxide and oxygen and avertin, are clearly described Chapter XIII gives a full description of a very dangerous anæsthetic—one we are determined never to use it again Chapter VII on [redacted] narcotics is perhaps a little short in view of the fact that the public knows [redacted] by name them Many anæsthetists feel that the dose of avertin given [redacted] per kilogramme is too high as it is not intended to be a complete [redacted] the 0 75 c c is effective

The clinical observations of the patient (Chapter V) are of particular interest and [redacted] the eye signs of anæsthesia are given most prominence at the expense of [redacted] Pupillary It is difficult to accept this especially in the case of premedicated [redacted] intratracheal anæsthesia is well dealt with in Chapter XII though the [redacted] machines described are out of date

[redacted] perfusion as an anæsthetist can only be obtained by experience, the [redacted] concise groundwork of this well produced volume should appeal alike to the [redacted] and practitioner

[redacted] OPHTHALMOLOGY IN GENERAL PRACTICE By O Gayer Morgan, M A F R C S [redacted] Monograph Series First edition 1935 London John Bale Sons [redacted] Danielsson Ltd Pp 58 10 plates 1 illustration Price 2s 6d

[redacted] object of this little book is to impress on the practitioner the importance of [redacted] examination of any inflamed eye and to help him to avoid delay in [redacted] that might be a serious affection Diseases of the Lids Conjunctiva [redacted] Ciliary Body, together with their chief diagnostic signs and treatment briefly discussed Gonorrhœa is rightly mentioned as the chief cause [redacted] the author refers to young adults and does not limit it to men [redacted] prognosis and treatment of iritis and glaucoma is well presented The [redacted] remarks made in the book with which many ophthalmologists will disagree [redacted] is no ordinary eversion of the upper lid one cannot scrutinize the upper [redacted] The [redacted] of papillomata is not quite so simple as the book would [redacted] abolition of the dural arteries is to be preferred to thrombosis, and it is [redacted] to find the term albuminuric retinitis still being handed down [redacted] might be given to the fundus changes ocular symptoms and [redacted] essential hypertension renal disease and eclampsia of pregnancy, [redacted] merely stating that these three conditions might produce albuminuric [redacted] is why one is settled that the sub retinal fluid in detached retina [redacted] is [redacted] there is present as many eminent ophthalmologists think [redacted] endothelioma [redacted] and malignant disease of the choroid by which is presumably meant [redacted] Senile [redacted] is not confined to old people Squint and [redacted] refraction are dismissed in five and a half pages, and ocular signs and symptoms of neurological diseases are not mentioned

The author however has established his object the book is well presented, the print is large and the subject matter easy to assimilate

AIDS TO SURGERY By Cecil A Joll, M S M D B Sc, F R C S Senior Surgeon and Lecturer on Surgery to the Royal Free Hospital Senior Surgeon to the Miller General Hospital, Consulting Surgeon to the Royal Bucks Hospital and Reginald C B Ledlie, Surgeon to the Miller General Hospital Surgeon to the East Ham Memorial Hospital Illustrated by H H Greenwood M B B S, F R C S Sixth Edition 1935 London Bailliere Tindall and Cox 7 and 8 Henrietta Street, Covent Garden W C Pp 612 Figs 44 Price 7s 6d

The latest edition of this little book has been brought entirely up to date It has also been considerably enlarged

The book places before the reader the essentials of surgical principles In addition, the commoner conditions met with in general practice are dealt with in more detail

For the first time a number of illustrations have been added These considerably enhance the value of the book

We can recommend this book to those who desire an outline of modern surgery or as a preliminary to the study of the larger works

THE ANATOMY OF THE LEG AND FOOT For Students and Practitioners of Chiropody By Philippa N Vans, L R C P, Lecturer to the London School of Chiropody With an Introduction by A R Compton, F R C S Lecturer to King's College, London First Edition 1935 London Bailliere, Tindall and Cox Pp xvi + 108 with 17 illustrations, plain and coloured

This book is written primarily for students of chiropody, whose interest centres around the feet and to whom minute detail is of no consequence The student cannot fail to appreciate the diagrams which are all original and very clear The text is simply written and is easily read The book should prove to be very useful to those for whom it is written

News of the Service.

ADMIRALTY ORDERS

719.—Venereal Disease

(N 843/35.—31/3/1935.)

Their Lordships desire to bring to the notice of the Fleet the serious consequences which may befall women from the contraction of venereal disease

2 Men with a history of repeated local infections of these diseases during the last six years of their first period of service will not be permitted to re-engage to complete a pension qualification at any time during their Naval service when efficiency, physical condition, or value to the Service becomes thereby materially impaired they will be liable to be discharged

(*A F O 681/35 is cancelled.*)

800.—Disinfectors—Disinfection of Woollen Materials

(D 24/31.—28/3/1935.)

When woollen goods are to be disinfected with steam a vacuum is first to be produced in the chamber and then steam allowed to enter The steam pressure is maintained at 10 lbs per sq in and is to be subjected to this pressure for from 10 to 15 minutes only and then dried off in vacuo

With a view to drying the external surfaces of the disinfecting chamber and to assist in drying the garment a pressure of 5 lbs per sq in is to be created in the heating chamber, before the steam is let in to the disinfecting chamber

841.—O.U. 6962—Health Lectures.
(N. 122/35.—28.3.1935.)

The pamphlet [illegible] of Addresses on some Important Health [illegible] Naval Men [illegible] under the title "Health Lectures," and copies [illegible] without demand from the R.N. Store [illegible] Naval Hospital [illegible] addition issued in August 1910 is obsolete [illegible]

(A.F.O.s 98/13 and 303/28 are cancelled.)

973.—Quarantine at Port Said.
(M. 1413/35.—18.4.1935.)

[illegible] through the Suez Canal can be exempted from quarantine [illegible] being made to the Director of Quarantine at Suez [illegible] to an [illegible] sick sment or case [illegible] or has touched at a port [illegible] within the period of incubation of that disease.

[illegible] H.M. Ships entering the Canal at Suez application for this exemption [illegible] by H.M. Consul [illegible] unless he is requested by the Commanding [illegible] Ships not affected by the exceptions laid down above may therefore [illegible] from quarantine formalities at Port Said unless informed to the contrary.

*974.—Promotion Examination for Rank of Surgeon Commander—Result.
(C.W. 2403/35.—M.D.G. 5081/34.—18.4.1935.)

The following officers qualified at the examination for promotion to Surgeon Commander held recently:—

Surgeon Lieutenant Commanders:
- *A. A. Pomfret, M.B., Ch.B., D.O., D.O.M.S.
- E. C. Davies, M.D., C.M.
- H. G. Anthony, M.B., Ch.B.
- E. J. D. Weeks, M.B., Ch.B.
- C. Keating, M.B., M., L.R.C.P.&S.
- *E. B. Pollard, M.R.C.S., L.R.C.P.
- *J. C. Souter, M.B., B.Ch.
- [illegible] Cason, M.B., B.Ch.
- D. C. Drake, M.R.C.S., L.R.C.P.

The officers marked * qualified for accelerated promotion.

*833.—Eyesight Standards for Men.
(N. [illegible]3/31.—4.4.1935.)

It has been decided to revise the standards of vision required for Naval ratings and Royal Marines.

[illegible] all candidates for entry, re-entry or re-engagement is to be tested and the [illegible] to be stated on the engagement form by the Medical Officer (the Ophthalmic [illegible] to whom such borderline cases only to apply the tests.

[illegible] this Order shows the standard required on first entry, the standard required [illegible] and the minimum standard acceptable during second period. The defects [illegible] in all cases be due to errors of refraction only. If there is any reason [illegible] retinal or optic nerve disease the candidate is not to be finally [illegible] the opinion of an ophthalmic specialist has been obtained. If there [illegible] higher degree of hypermetropia than that stated in the standards the [illegible] is not to be entered until the opinion of an ophthalmic specialist [illegible]

[illegible] These are to be adopted for all new entries, for transfers from the Reserve [illegible] on their rating, when they are transferred [illegible] and for the re-entry of men with less than ten years [illegible] The case of specially desirable candidates for transfer [illegible] this standard but above the re-engagement standard may be submitted [illegible] for individual consideration.

[illegible] These are to be adopted for re-engagement, for transfer [illegible] ten years or more man's service, and for the [illegible] more men's service allowed to count for pension. They are [illegible] permissible for men in their first period, with less than ten [illegible] found to be below these standards should be brought [illegible] invaliding, except that ratings found to be suffering from [illegible] invalided but dealt with as laid down in A.F.O. 154/33 (not [illegible])

[illegible] instances must be cases where a man has to sign a re-engagement after more [illegible] service, either because he is a [illegible] continuous service rating or has a [illegible] engagement history. In such instances, men who have completed fifteen

years at most may be considered only inquiries to reach the [illegible] final period. Men who have between twelve and fifteen years' [illegible] below the re-engagement standard, but of or above the minimum standard [illegible] may be admitted to the Admiralty for individual consideration.

Near Vision.—Men who are permitted to wear glasses on duty [illegible] for re-engagement if they can read Snellen's D—6/6 (Jaeger 2) with each eye tested separately at not less than 18 inches' distance.

III. *Minimum Standards in Final Period.*—Those who [illegible] acceptable and men in the final period who fall below them should be [illegible] survey with a view to invaliding except that [illegible] be offered [illegible] an should not be overlooked, but dealt with as laid down in A.F.O. 1412/19 (Part [illegible] and Volume).

The new standards are not higher than those previously in force [illegible] Regulating Branch will be the old standards were. On being graded in the final period [illegible] Re-engagement standard 6/18—6/18. Minimum standard in final period 5/18 [illegible] together worse eye not less than 6/36.

For the Regulating Branch the new standards apply to all [illegible] after the date of this Order, but men already in the branch of old rate may be brought forward for any vacancy unless they fall below the old standards.

For all of both branches the new standards are to be brought into force [illegible] at the

Form.—Form vision and distant vision is to be [illegible] by Snellen's test types. All visual tests for entry or entry to engagement or advancement are to be [illegible] under the following standard illumination conditions:—

Two ordinary 20 watt Incandescent lamps with straight filaments are fixed [illegible] in front of the test card, one on each side at a horizontal distance of [illegible] from the vertical plane normal to and bisecting the card. One lamp is placed [illegible] the other on a line being opposite the junction of the upper and middle thirds of the card. The other opposite the junction of the middle and lower thirds. Opaque screens are fitted [illegible] so as to prevent direct light from the lamps reaching the [illegible] eyes. The diagram (Admiralty Diagram No. 12/39) (see Diagram Issue No. 12/39) shows the front view and plan of the standard illumination arrangements.

Daylight is to be excluded while testing is in progress, and the testing compartment is to be moderately illuminated by artificial light.

Green glasses are to be taken [illegible] for viewing lights or other bright objects at sea with the unaided field of vision.

Letters and letters are illuminated test cards with the background left to be invalid.

Test cards are to be wrapped up and locked away or otherwise protected when not in use. If the cards are left permanently exposed their lettering may be immunized by prospective candidates and they also become unreliable by discoloration due to exposure.

A solution is to be made of the Medical History Sheets of all men possessing unsatisfactory vision [illegible] 6/5 and 6/4 in order that they may be selected as special lookouts whose [illegible] eyes.

Colour Vision.—Colour vision is to be determined by Ishihara's cards and the Edridge Green lantern. The adoption of a new lantern for [illegible] Holmes lantern, recommended. The grading full particulars of which has been [illegible] issued to the home ports and the Recruiting Service in Medical Research Council Special Report Series No. 138. It briefly as follows:—

Grade I.—Candidates are required to pass the complete Edridge Green lantern test.

Grade II.—Candidates are required to pass a modified Edridge Green lantern test using the unaided naked eye without [illegible] or modifying glasses.

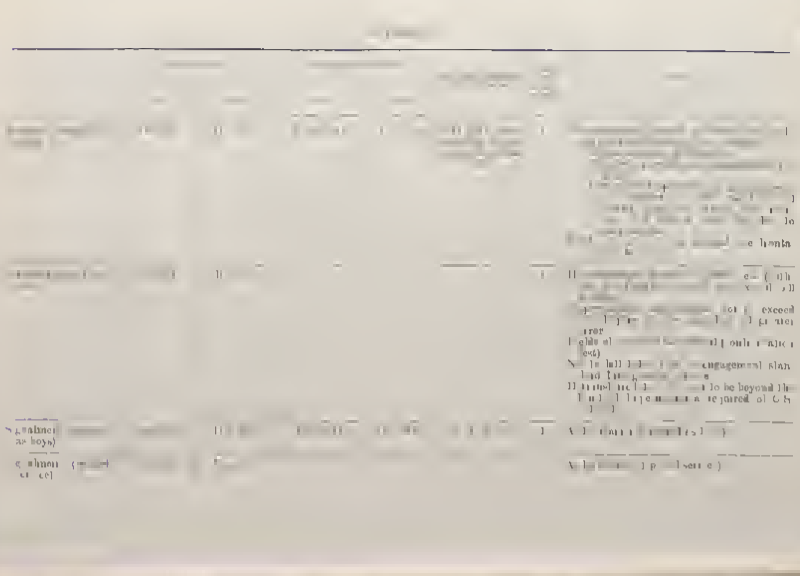
Grade III.—Candidates [illegible] the largest aperture.

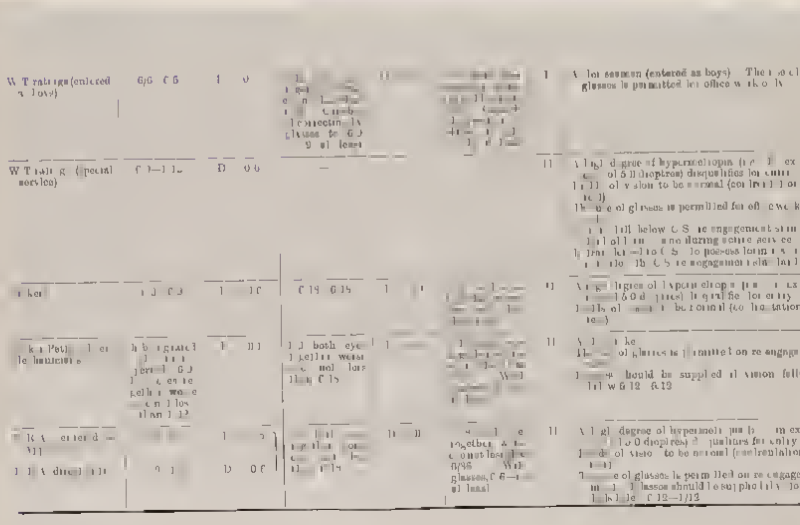
Any colour vision loss not falling into [illegible] except a minor loss of [illegible] or absence of a separate standard of colour vision for re-engagement or [illegible] purposes unnecessary and is not laid down.

Wearing Glasses at Duty.—All men in the Royal Navy and Royal Marines are required to be capable of performing their duties without the aid of glasses, with the exception of those who may be permitted to wear glasses in such duties as may and [illegible] as follows:—

Watchkeeping officers.
Signalmen during [illegible] (when employed on sea-keeping duties).
Writers.
Stokers during [illegible].
Stokers during [illegible] (on officers only).
Officers' messmen.
Officers' servants.
Boy seamen.
Royal Marine Buglers.
Royal Marine Drummers (on officers only).

In addition [illegible] men of the following ratings in their second [illegible] engagement may be permitted on a privilege to wear glasses in order to avoid invaliding





[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	II	[illegible]
O A [illegible] apprentice	[illegible]	[illegible]	[illegible]	[illegible]	II	[illegible]
O A diesel [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Shipwright as Apprentice	[illegible]	[illegible]	[illegible]	[illegible]	II	[illegible]
Shipwright [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible] Blacksmith [illegible]	[illegible]	[illegible]	[illegible]	D [illegible]	II	[illegible]
Rigger, Boat [illegible]	[illegible] Boatswain [illegible] [illegible]	[illegible] [illegible] [illegible]	[illegible]	[illegible]	II	Fields of vision to be normal (medical adjudication) Glasses may be worn in offices only

Sick Berth Staff	6/12—6/12	D — 0·6	6/36 both eyes together worse than 6/36 With glasses 6/6 at least	D—0·6 with glasses	6/60—6/60 With glasses 6/12—1/12 at least	II	A high degree of hypermetropia or of astigmatism of 5·0 dioptres or a gross defect of field of vision disqualifies for entry Glasses may be worn on duty
Writers, Supply Officers, Steward Branch	6/12—6/12	D 0·6	6/18 both eyes together worse than 6/36 With glasses 6/9—6/9 at least	D 0·6 with glasses	6/60—6/60 With glasses 6/12—6/12 at least	III	As for Sick Berth Staff
Naval Mariners	6/12—6/6	D 0·6	6/12—6/12	D 0·6	6/12 both eyes together worse than 6/24	II	Hypermetropia present in either eye (without cycloplegia) should not exceed — Hypermetropia 2·0 dioptres Simple hypermetropic astigmatism 2·0 dioptres Compound hypermetropic astigmatism 2·0 dioptres, the meridian of greatest error of which not more than 1·0 dioptre may be due to astigmatism Fields of vision to be normal (confrontation test)
[illegible] Band	[illegible]	[illegible] 0·6	6/18 both eyes together worse than 6/36 With glasses 6/9 at least	D 0·6 with glasses if necessary	6/60—6/60 With glasses 6/12—6/12 at least	II	A high degree of hypermetropia or of astigmatism of 5·0 dioptres or a gross defect of field of vision disqualifies for entry Glasses may be worn on duty
[illegible]	[illegible]	6/12 both eyes together worse than 6/24	D — 0·6 with glasses if necessary	6/24 both eyes together worse than 6/36 With glasses 6/12 at least	—	The use of glasses is permitted when engaged on sea-breaking duties

(A I O 129/32 is cancelled)

[illegible] selective vision they are medically fit and [illegible]
[illegible] ...ordered on this merits by the Chairman Sing [illegible]

[illegible] Volunteer

[illegible]
[illegible] ...ffers
[illegible] ...ding needs in Writers
[illegible] ...ve
[illegible] ...ch the
[illegible] ...ems

[illegible] supplied on the public expense to any rating in the [illegible] ...eyesight becomes defective only into His Service provided [illegible] ...ration standard prescribed in the Branch and Trade concerned. [illegible] ...ablished he is eligible to be supplied by the Service with [illegible] ...that respect in the following circumstances:—

[illegible] ...necessary [illegible] ...prescription glasses at the [illegible]

[illegible] ...ish rolled gold frames and cut sides can be supplied [illegible] ...e [illegible] ...lowed. This is to be the slender type of frame [illegible] ...shown. If desired, enquiries through Naval Dispensaries [illegible] ...old and will bear the proportion supplied by the [illegible] ...spectacles must be carried with due regard to [illegible] ...and [illegible] ...these the purchase and renewal [illegible] ...prescribed one. These the purchase may be [illegible] ...When [illegible] ...this [illegible] ...is a minimum is to be made on the men's [illegible]

[illegible] ...responsible for loss or damage through misuse duet or negligence [illegible] ...concerned.

[illegible] ...year [illegible] ...when it has been considered that they are necessary [illegible] ...supplied as reasonable and [illegible] ...in accordance [illegible] ...with [illegible] ...old or [illegible] ...and a reduced rate [illegible] ...Air

[illegible] The [illegible] ...regulations apply [illegible] ...there [illegible] ...will [illegible] ...

[illegible] ...Article 17
[illegible] ...Article 40 (*b*)
[illegible] ...Appendix J
[illegible] ...Instructions Article 8
[illegible] The [illegible] ...in R.N. Active Service
R.N. Pay and Pensions Regulations para. 194

(*Continued on page 268*)

1960.—Colour Vision—Ishihara Test Cards—Scrutiny

(N.P.M.D.G. 286/2/25.—23.5.1930.)

[illegible] ...art from the testing of colour vision [illegible] ...are liable to fade or to [illegible] ...though kept in the dark [illegible] ...ordered that all cards are to be examined at yearly intervals in such a manner [illegible] ...such an extent as to render them unsuitable [illegible] ...examination will be carried out in future at the Medical Department of the [illegible] ...All cards should be sent annually to the Department in the [illegible] ...they may be marked. The cards should not be forwarded until asked for.

(*A.F.O. 2608/1934 is cancelled.*)

1952.—Sick Berth Staff—Efficiency Medal

(N.14.11.1935.—6.6.1936.)

[illegible] ...Petty Officers of the Efficiency Medal (for 1945) has been awarded to S. [illegible] ...Name (in full) Official Number P.M. 65119. Portsmouth. Port Division. [illegible] ...Officers of the Devonport Port Division may be recommended for the [illegible] ...for similar services in 1936.

[illegible] ...awarding recommendations is published in the Appendix to the Navy [illegible] ...Instructions for 1934.

OBITUARY

We regret to [illegible] the following deaths [illegible] and [illegible] sympathy to the relatives :—

[illegible] (Retd.) who died [illegible] at [illegible] 187[illegible] He received his [illegible] education at St. Bartholomew's [illegible] M.R.C.S., L.R.C.P. [illegible] [illegible]

[illegible] He [illegible] HOSPITAL at [illegible] [illegible]

[illegible] In February 1913 he was [illegible] H.M.S. [illegible] [illegible]

[illegible] Captain Sidney [illegible] S.S. [illegible] 1913

[illegible]

[illegible] (Retd.) [illegible] April [illegible] 1935 [illegible] [illegible] R.N. Hospital [illegible] H.M.S. *Hood* [illegible]

[illegible] March 1933 [illegible]

[illegible] (Retd.) who [illegible] 1933, was [illegible] at St. George's Hospital [illegible] 1885 [illegible]

in H.M.S. [illegible]. In 1890 he joined H.M.S. *Britannia* where he spent the next two years. Subsequently he served in H.M. Ships *Hyacinth*, *Naiad*, *Melampus*, *Intrepid*, *Fearless* and *Victoria* and *West Indies*, *Minerva*, *Diadem*, *Imperieuse*, *Royal Arthur* (Mediterranean), *London* and *Formidable* successively. During the period 1897–1900 he was promoted to Staff Surgeon and in 1901 to Fleet Surgeon. In September 1908 he was placed on the retired list at his own request.

He rejoined the Service during the Great War and was appointed to H.M. Dockyard at Devonport in August 1914 where he remained until 1919 when he joined H.M.S. *Courageous* (flagship of the Rear-Admiral (Air)). He served in this ship until March 1918 when he was appointed to H.M.S. *Fearless* for special service in connection with the Inquiry on Naval Aeronautics. On the latter ship he was stationed at the Royal Air Force, where he remained until May 1919 when he was retired in the retired list. He was promoted to Surgeon Captain (Retired, from November 1918 in recognition of his services during the war.

Surgeon Captain Smith was well known as a keen and accomplished athlete. He was the author of "The Destroyer" and other stories of the Royal Navy.

Surgeon Commander John Lyttelton Handel-Greenshaw (Retd.) who died on May 1935 was born in 1875. He received his medical qualification at the Victoria University, Manchester and also had the degrees M.B., Ch.B. in 1898 to which he added that of M.D. in 1905. He joined the Royal Navy in May 1899 and during the usual subsequent R.N. Hospital Haslar spent [illegible] as a R.M. ships' surgeon in H.M.S. *Gladiator*, *Harrier* and *Intrepid*. The last named was on the Mediterranean station. His next appointment was to R.N. Hospital Plymouth where he remained until 1905. Subsequently H.M. ships *Sutley*, *Robin* and *Goshawk* all on the Dover station followed and during the period he was promoted to Staff Surgeon in 1907. On his return home he served for two years in H.M.S. *Vernon* and then returned to sea in H.M. Ships *Swiftsure* and *Blonde* (on which he had his second Fleet Surgeon's) and *Minerva*. This was followed by a long period until February 1918 when he joined No. 60 Squadron Armoured Cars, Middle East Brigade. Subsequently he served in H.M. Ships *Benbow*, *Lion* and *New Zealand* while there established himself as a really keen Experimental Station at Shoeburyness and the Royal Naval Air Station at Stamford. He was finally placed on the retired list at his own request in March 1924. He was renowned for his ability in the aquarium as the animals in it [illegible] like a huge pet.

Fleet Surgeon William Edward Home, O.B.E. (Retd.) who died in June of the year was born in 1861. He received his medical education at Edinburgh University and obtained his diploma M.B., C.M. Edin. in 1885 to which he added M.D. Edin. in 1895, M.R.C.P. Edin. in 1901 and D.P.H. in 1904.

He joined the Medical Branch of the Royal Navy on August 20 1885 and proceeded to R.N. Hospital Haslar. On the completion of his training, after which he held short appointments as R.M. Ships *Lizard* and *Excellent*—this latter ship being the command of Captain John (then Lieutenant) Hall—Dr. Home (then Lieutenant) was Lieutenant Percy Scott (later Admiral Sir Percy Scott) in the Jackass. In 1896 he was appointed H.M.S. *Alexander* and the Medical Officer Station and Hospital Ship at Simonstown. He was finally placed on the retired list at his own request in March 1904. He was renowned for his ability in the aquarium as the animals in it [illegible] like a huge pet.

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Fleet Surgeon William Edward Home, O.B.E. (Retd.) who died in June of the year was born in 1861. He received his medical education at Edinburgh University and obtained his diploma M.B., C.M. Edin. in 1885 to which he added M.D. Edin. in 1895, M.R.C.P. Edin. in 1901 and D.P.H. in 1904.

He joined the Medical Branch of the Royal Navy on August 20 1885 and proceeded to R.N. Hospital Haslar. On the completion of his training, after which he held short appointments as R.M. Ships *Lizard* and *Excellent*—this latter ship being the command of Captain John (then Lieutenant) Hall—Dr. Home (then Lieutenant) was Lieutenant Percy Scott (later Admiral Sir Percy Scott) in the Jackass. In 1896 he was appointed H.M.S. *Alexander* and the Medical Officer Station and Hospital Ship at Simonstown. He was finally placed on the retired list at his own request in March 1904. He was renowned for his ability in the aquarium as the animals in it [illegible] like a huge pet.

Surgeon Lieutenant [illegible] Dan Malcolm Sim (Retd) [illegible] has received the medal of [illegible] L R C P L R C S Edin and L R F P S Glas He joined the Royal N[illegible] Medical Service as a Short Service Officer and retired to the Emergency List in [illegible] While on the outbreak of the present war he was serving in the R M [illegible] Chatham On the next two years [illegible] he had short periods of service [illegible] being appointed during that period H M Ships Duchess and Caradoc in [illegible] [illegible] operational service [illegible] In 1938 he served in the Mediterranean H M S [illegible] and *Fortune* In February 1939 he was appointed to H M S *Lily* a [illegible] [illegible] appointment owing to ill health and in March 1939 he was placed on the [illegible] retired list

HONOURS

Surgeon Rear Admiral H R H Denny C B M R C S L R C P D P H appointed Honorary Surgeon to H M The King (K H S) May 8 1935

Surgeon Rear-Admiral J S Dobbie, O B E M R C S L R C P is to be Companion of the Most Honourable Order of the Bath (C B) on the occasion of His Majesty's Birthday and in commemoration of the completion of the 25th year of His Majesty's reign

Surgeon Captain C F O Sirk M B B S M R C S L R C P to be Officer of the Military Division of the Most Excellent Order of the British Empire (O B E) on the occasion of His Majesty's Birthday and in commemoration of the completion of the 25th year of His Majesty's reign

NORTH PERSIAN FORCES MEMORIAL MEDAL

Captain P Shennon Indian Medical Service has been awarded the North Persian Forces Memorial Medal for the year 1934 for his paper entitled "A Study of Trachoma in Baluchistan" published in the *Indian Medical Gazette* of December 1934

The North Persian Forces Memorial Medal is awarded annually for the best paper on Tropical Medicine or Hygiene published in any Journal during the preceding twelve months by a Medical Officer of under twelve years' service of the Royal Navy, Royal Army Medical Corps, Royal Air Force, Indian Medical Service or of the Colonial Medical Service provided the Memorial Committee consider that any of the papers published has attained the standard of merit justifying an award

OSBORNE HOUSE GOVERNORSHIP

Major General John W West C M G C B K H S A M S has been appointed House Governor and Medical Superintendent of the King Edward VII Convalescent Home for Officers at Osborne, Isle of Wight in succession to Major General Godfrey Thomas C I E who will retire in October next

DEGREES AND DIPLOMAS

Surgeon Lieutenant-Commander G D J Ball M B Cantab B Ch has obtained the Diploma of Ophthalmic Medicine and Surgery (D O M S)

Surgeon Commander K W Mussen M B B Ch has obtained the degree of M D of Queen's University Belfast

TRANSFERS TO PERMANENT SERVICE

Surgeon Lieutenants S K Foster M B Cantab B Ch M R C S L R C P J W Oliver M R C S L R C P H de B Kamphorne M B B Ch F M Dubbie M B Ch B T McCarthy L R C P & S

RETIREMENTS

Wheeler, C M C, MB, ChB, b 18 Nov 1895, qualified 1919, entered RN 1920, Surgeon Rear Admiral (D) 1 Jan 1946, retired 1 Jan 1948.

Dimmet, M R C S, L R C P, placed on retired list 15 April 1945.

Mansell, M D, Ch B, placed on retired list 1 Jan 1935.

Hall, placed on retired list at own request [illegible].

Hill, W F A, Sampson, L R C S, placed on retired list 7 (D) May [illegible].

Short, Surg Lt Comdr, engaged for [illegible].

PROMOTIONS

[illegible] MB, BS, to be Surgeon Rear Admiral, 31 Dec.

[illegible] Holden, O B E, M R C S, L R C P, D P H, to be Surgeon Rear Admiral, 1 Jan 1948.

[illegible] R B Hill, M R C S, L R C P, and [illegible] M R, Third Lieutenants to be Captains, 3 Jan 1948.

[illegible] A de V A Lambert, M B, Ch B, D O, to be Surgeon Lieutenant, 1 Jan 1948.

[illegible] to be Surgeon Lieutenant, 1 Jan 1948.

[illegible] W Higgins, M B, B Ch, D L O, to be Surgeon Lieutenant, 1 Jan 1948.

[illegible] (D) A Lawley, O B E, L I S, to be Surgeon Commander, 1 Jan 1948.

[illegible] John, M B C S, L R C P, to be Surgeon Lieutenant, 1 Jan 1948.

APPOINTMENTS

March

[illegible] Iris L C Davis, M D, C M, to *Ajax*, 8 March.

[illegible] M B, B S, to *Tiger*, 10 March.

April

[illegible] M F Bell, D T M S, to R N Hospital Haslar (and as Medical Officer), 1 April.

[illegible] to O B E, M B, B S, M R C S, L R C P, to R N Hospital Malta (and as Medical Officer), 1 April.

[illegible] to L R C P, L A S, to R N Barracks, Devonport, 1 April.

[illegible] W A Jolliffe, to Naval Squadron, M O), 1 April.

[illegible] F Heffernan, M B E, B Ch, to R N Hospital Haslar (and as Specialist), 1 April.

[illegible] to R N Barracks, Chatham, 1 April.

[illegible] W G Murray, to R N Hospital, Plymouth, 1 April.

[illegible] A Lewis, O B E, L D S, to R N Barracks, Portsmouth, 1 April.

[illegible] Potter, M B, B Ch, to *Achilles*, 1 April.

[illegible] C H Burt, M B, B Ch, to *Victory* (and as Specialist in Psychology), 1 April.

[illegible] R L G [illegible], to R N Hospital, Plymouth (and as Specialist in Bacteriology), 1 April.

[illegible] to Naval Base, Singapore (and as N H O), 1 April.

[illegible] A Cusack, M B, to *Implacable*, 1 April.

[illegible] J J Benson, M R C I, & L, to *Whitehall*, 1 April.

[illegible] M Hunt, L D S, to *Excellent*, 1 April.

[illegible] of, M R I S, L R C P, to *Fretchare*, 1 April.

May

[illegible] Beridge, O B E, M R C S, L R C P, to R N Hospital Haslar, 1 May.

[illegible] Ellis, O B E, L R C S, M B, B S, D P H, to Naval Medical Department, 1 May.

[illegible] appointed as Director of Medical Studies and Professor of Naval Medicine, 1 May.

[illegible] H I M R I, to R N Barracks, Portsmouth (and as Garrison Officer), 1 May.

[illegible] to Home 4th Cruiser Squadron (and as Command), R S C Colson, M B, B S, D T M & H, D P A, 1 May.

[illegible] M B, B S, M R C S, L R C P, to *Barham* (and as Specialist), 1 May.

[illegible] M B, Meleod, M B, Ch B, to Medical Department, 1 May.

[redacted]

Surgeon Captain J [redacted] el Gun C Mediterranean [redacted]

Surgeon Commdr [redacted] Ophthalmic Specialist [redacted] Hospital Phy[redacted] Specialist in Anesthetics

Surgeon Lieutenant Commanders [redacted] MRCS LRCP in RN Defence [redacted] Surgery) [redacted] MSM LRCP & S in RN [redacted] JJ [redacted] BCh to *Royal Sovereign* DR [redacted] Barracks Clare[redacted] Int MTB]

Surgeon Lieutenants [redacted] Pocket [redacted] MSSA to RN Barracks P[redacted] IB MRCS LRCP *Ranchelaw*

Surgeon Rear-Admiral [redacted] RCT to RN Hospital Chatham (and as MO in Charge)

ENTRIES

The following gentlemen have been entered as Surgeon Lieutenants RN for Short Service and appointed to RN Hospital Haslar (for names of instructors see April 2 1936

Mr Sydney James van Tuts MB BS (seniority February 1935)
Mr Arthur Lusk Lamont Clark MB BCh M (seniority March 1 1935)
Mr Basil Keeley Alderson LRCP & S (seniority April 2 1936)
Mr Maurice Coy MB ChB (seniority April 2 1936)
Mr Samuel Charles Shakespeare Cooke MRCS LRCP (seniority April 2 1936)
Mr Dennis Clifden Dobson MB ChB (seniority April 2 1936)
Mr John Morley Holford MRCS LRCP (seniority April 2 1936)
Mr Denis William Frost MB BCh (seniority April 2 1936)
Mr Wilfred Frederick Richards BCh MRCS LRCP (seniority April 2 1936)
Mr Robert Hamish Alastair Turnbull MRCS LRCP (seniority April 2 1936)

WARDMASTERS

Acting Warrant Wardmasters R [redacted] ck confirmed in rank March 1 1936

SICK BERTH PETTY OFFICERS EFFICIENCY MEDAL

The above medal for 1935 has been awarded to S.B.P.O. C. T. Johnson, M.M., D.S.M., R.N. Barracks, Portsmouth.

ROYAL NAVAL VOLUNTEER RESERVE

RETIREMENTS AND RESIGNATIONS

Surgeon Lieutenant B. B. Alderson, L.R.C.P. & S.—Commission terminated on entry into R.N. as Surgeon Lieutenant.
Surgeon Lieutenant P. F. Blacklock, M.B., resigned, May 9, 1935.
Surgeon Lieutenant P. E. S. Rentoul, M.B., Ch.B., resigned, May 9, 1935.

PROMOTIONS

Surgeon Lieutenant-Commander C. F. Abercrombie, M.A., B.Ch., to be Surgeon Commander, June 30, 1935.
Surgeon Lieutenant G. M. Taunton, M.B., Ch.B., to be Surgeon Lieutenant-Commander, April 11, 1935.
Surgeon Lieutenant J. O. Clyde, to be Surgeon Lieutenant-Commander, April 26, 1935.
Surgeon Lieutenant C. Mairet, M.B., to be Surgeon Lieutenant-Commander, June 3, 1935.
Surgeon Lieutenant M. L. Rolleston, to be Surgeon Lieutenant-Commander, May 7, 1935.

Probationary Surgeon Lieutenant F G Burgess M B E C S L R C P confirmed as Surgeon Lieutenant March 1 1935

Probationary Surgeon Lieutenant C J T Watson M R C S L R C P confirmed as Surgeon Lieutenant April 24 1935

Probationary Surgeon Lieutenant (D) J W W Jamieson L D S confirmed as Surgeon Lieutenant (D) April 16 1935

Probationary Surgeon Sub Lieutenant R T Grant confirmed as Surgeon Sub Lieutenant January 30 1934

APPOINTMENTS

April

Surgeon Lieutenant J F Carr M B Ch B transferred from List 2 Mersey Division to List 11 Severn Division April 15 1935

Probationary Surgeon Sub Lieutenants G S Irving and R F B Bennett to *Renown*, C P Nicholas to *Rodney*, R T Gaget to *Valiant*, F S Laffaye to R N Hospital Plymouth, F Gibbs Turtle to *Valiant*

May

Surgeon Commander W B Butcher M D D P H to R N Hospital Chatham

Surgeon Lieutenant Commander G F Abercrombie B Ch to *Barham*, A B Thomas to *Tiverton*

Surgeon Lieutenant Commander J L Cox M R C S L R C P transferred from List 11 Severn Division to List 11 London Division May 30 1935

Surgeon Lieutenants D W Bawtree to *Iron Duke*, W G MacEoin M B, Ch B, to *Valiant*, D M Dean M R C S, L R C P to *Barham*, G M Lamont M B, Ch B, to R N Hospital, Haslar, G F E Pirkis to *Iron Duke*, G Straby to Carrier, G R Sellers, M B, Ch B to *Tiverton*, J N Matthews L R C P to R N Hospital, Chatham

Probationary Surgeon Sub-Lieutenants K E O Kingdon to *Renown*, F K H Gray to *Lodmy*, G E M Hopson to *Renown*

June

Surgeon Commander W F W Bateman M B, Ch B, D P H, to *St Vincent*.

Surgeon Lieutenant-Commanders R E D Roberts M B, Ch B, to R N Barracks, Portsmouth, A W Kendall M R C S., L R C P to R N Hospital, Chatham

Surgeon Lieutenants R D Jenkins M B, Ch B, to R N Barracks, Portsmouth, W T R Chapman M R C S, L R C P to *Durban*, J E L Morris M R C S L R C P to *Tiverton*

Probationary Surgeon Lieutenant J L Dunlop M B, Ch B, D P H, D T M & H, to *Tiverton*

ENTRIES

Mr A I L Maitland M B, Ch B, F R C S, entered as Probationary Surgeon Lieutenant List 1 Clyde Division (Headquarters) April 16 1935

Mr E J S Woolley M B, B S, M R C S, L R C P entered as Probationary Surgeon Lieutenant, List 11 London Division May 29 1935

Mr R F King entered as Probationary Surgeon Sub Lieutenant, List 11 Clyde Division, May 29 1935

QUEEN ALEXANDRA'S ROYAL NAVAL NURSING SERVICE

PROMOTIONS

Nursing Sister Miss M Goodrick, to be Superintending Sister June 23 1935

RETIREMENTS AND RESIGNATIONS

Superintending Sister Miss F T Greig R R C appears until June 23 1935

Nursing Sister Miss C McL Ferguson resigned March 31 1935

Nursing Sister Miss H Tridell resigned May 6 1935

Nursing Sister Miss E M St J Jones, on position cancelled

ENTRIES

Miss Phyllis Lucy Shipton entered as Nursing Sister on probation April 16 1935

Miss Katharine Matthew entered as Nursing Sister on probation May 28 1935

Miss Kathleen Alice Miles entered as Nursing Sister on probation June 24 1935

APPOINTMENTS

Superintending Sister Miss E M G Hirst R R C to R N Sick Quarters Shotley June 17 1935

Nursing Sister Miss P L Shipton to R N Hospital Plymouth April 16 1935

Nursing Sister Miss K. Matthew, to R N Hospital Chatham May 28 1935

Nursing Sister Miss K A Miles, to R N Hospital, Plymouth June 24, 1935

ROYAL NAVY MEDICAL CLUB

The Annual Dinner of the Royal Navy Medical Club was held at the Trocadero Restaurant on April 26. One hundred and twenty four members and private guests attended.

Surgeon Vice Admiral R. W. B. Hall, C.B., O.B.E., K.H.P., Medical Director-General of the Navy, presided.

In opening his speech the President expressed the pleasure and pride that it gave him to make his first appearance in the Chair. He then read out telegrams of good wishes for a successful evening from the Royal Naval Hospitals at Malta and Hong Kong, also from Sir James Porter and Sir Robert Hill, both of whom were unable to be present owing to temporary ill health. He next commented upon certain changes which had been made in the arrangements of the dinner, the absence of official guests, the fact that there was no orchestra and no other speeches than his own, and stated that it had been felt that a change on these lines might be acceptable and that with the unanimous approval of the Committee the alterations had been instituted experimentally, the intention being that there should be less formality and greater opportunity of meeting old friends. In reporting on the Club, he stated that the financial position was sound, that there was a credit balance of £83 and a membership of 416. Seven new members had joined during the past year but it was noticeable that they were all senior officers. He was disappointed that there were no recruits among the junior officers and urged members to do their best to make young officers realize how warmly they would be welcomed in the Club. He pointed out that it was upon the younger members that its future welfare depended.

With deep regret he then recorded the deaths of the following members: Surgeon Rear Admiral A. G. Wildey, Surgeon Rear Admiral E. J. Finch, Surgeon Captain S. Rosah, Surgeon Captain R. J. G. Parnell and Surgeon Commander S. R. Johnston, adding in each case a few words of kindly remembrance.

Although not a member of the Club, he said that he felt he must mention the death of Sir John Ross Bradford who for many years had been a member of the Consultative Board, and was the son of a naval medical officer who was in the British Fleet at Trafalgar. Sir John was a man of great clinical acumen and wide experience, possessing a broad and generous outlook on professional subjects and on life in general. His place on the Control Board would be difficult to fill. He then proceeded to report upon the Naval Medical Compassionate Fund. On the whole the financial position was fairly good. On March 31 in the current year there was a credit balance of £367 16s. 4d. During the past year assistance had been given to sixteen cases the amount distributed being £630. The commitments were, however, increasing, and the subscriptions falling. Out of a total of 284 subscribers only 109 were on the active list, which meant that 244 officers of the Branch did not support the Fund. He felt that it was difficult to understand why this should be the case. The object of the Fund was a very fine one and the help given in necessitous cases was practical and, so far as the money at the disposal of the Fund permitted, was generous. With a falling revenue, that help must necessarily be restricted, a fact that he deeply deplored. He appealed once again to those not already subscribers to become members of the Fund, the subscriptions being only one guinea a year.

He then went on to explain how, by signing a covenant to remain a subscriber for seven years or for life, whichever period was the shorter, it was possible to obtain a refund of Income Tax from the Inland Revenue authorities upon each subscription. By this means, with the Income Tax at its present rate, for every guinea subscribed the Fund received a rebate of 6s. 2d., and he pointed out that if every subscriber were to do this the revenue of the Fund would be

increased by nearly 30 per cent—a truly remarkable piece of [illegible] seemed at first too good to be true but which was proved to [illegible] last that four members had undertaken the experiment of signing [illegible] covenant and that the rebate had been paid The system was therefore to be extended and all subscribers asked to sign the covenant

Speaking of the general conditions of the Naval Medical Service the President remarked on the anxiety with which at the last dinner, every one was waiting for an announcement of the application to the Navy of the proposals of the Warren Fisher Committee Shortly afterwards the new conditions were made known and although expectations and hopes may not have been fully realized, and for some no doubt there had been disappointments, yet it must be acknowledged that very great improvements in the conditions of service had been brought about He said that he wished to take the opportunity of expressing the deep gratitude of the Branch to Sir Arthur Geikell for the part he played in bringing about these reforms Few knew the immense amount of thought, time and energy that Sir Arthur had expended in his work on the Committee, and the opposition that he had to overcome The Naval Medical Service, present and future owed him a heavy debt of gratitude In Sir Reginald Bond also was owed a similar debt On him fell the difficult task of applying the proposals and of struggling to secure the benefits which those proposals were designed to produce He then pointed out to his hearers the more important benefits which had come to the Branch

(1) A substantial increase in the number of Surgeon Captains

(2) The increase in the age for retirement Surgeon Captain to 57 and Surgeon Commander to 55

(3) An increase in the number of specialists, up to 83

(4) Higher gratuities to Short Service Officers and

(5) Gratuities to officers transferred from Short Service to the Permanent List

(6) The upgrading of the appointment of Deputy M D G (formerly a Surgeon Captain) into that of a Surgeon Rear Admiral

The Short Service system had been adopted permanently and the number of officers on that list increased with a corresponding decrease in the Permanent List

He then commented on the net result of these new conditions how the Navy now offers a Short Service system which is financially satisfactory, and to those officers selected for the Permanent List a well paid and professionally attractive career to, at least the age of 55 with ample opportunity to specialize and a very greatly improved chance of promotion to the higher ranks

With regard to the establishment of 33 Surgeon Captains he said that it would be worked up to in another twelve months The former limit of age for promotion to this rank namely 50, had been temporarily abolished— Eventually however a "zone" would be created

The outstanding result of these reforms the President continued, was that for the first time for twenty years it had been possible to revert to the system of entry by batch—' This we must all regard as an immense success—an achievement to which the older generation at any rate have looked forward in with great hope, but at times with the fear of ultimate disappointment I regard this result with profound satisfaction for its benefits are immense and added that he was happy to say that in the two batches which had so far been entered expectations had been fully realized For the first entry of 19 there were 17 competitors, and for the second of the same number, 19 The standard of the new entries was very high The President then referred to the Dental Branch Improvement and reorganization he said were long overdue Reference to the Branch had been made in the Warren Fisher Committee but no specific proposals had been formulated beyond the statement that some of the proposals regarding the medical

services could advantageously be applied to the Dental Service This important subject had been fully considered and plans for reorganization had been drawn up Conferences had been held with the Army and Air Force representatives and a final scheme had been drafted As the scheme was still under consideration by the Board and had yet to be presented to the Treasury it must be understood that he was unable at this time to refer to the proposals in detail He could only say that the proposals were made with a view to providing greater opportunity of promotion to the higher ranks extended length of service and to bring the conditions of service in the Dental Branch into closer relation to those of the Medical He expressed the sincere hope that the proposals might be approved He then paid tribute to Surgeon Captain Hetchel for the zeal and skill with which he had fathered the cause of the Branch to the immense amount of thought that he had given to its welfare and added that it had been a great pleasure to him to be associated with this officer in an effort to remedy the disadvantages from which as a Branch, they had suffered in the past

Referring to the Queen Alexandra's Royal Naval Nursing Service he said that a scheme of reform was at the time under consideration by the Treasury If the proposals were approved they would benefit considerably in regard to pay pensions and promotion His next subject was the Royal Naval Volunteer Reserve and he expressed pleasure in the fact that an increase in the establishment of Surgeon Commanders R N V R had been obtained the number having been increased from 12 to 20, with an increase in the age of retirement He felt that this was a recognition, though perhaps a small one of the zeal and devotion to the Navy realised by all as the mainspring of service in the R N V R He then announced that several of these officers are to be invited to take the medical charge of ships specially commissioned for the forthcoming Naval review There had been very many applications and although it was impossible to accept all owing to lack of accommodation as many as possible would be employed

Other subjects mentioned by the President as receiving or having received consideration were —

(1) The training of future specialists, and the building up of a body of young medical officers who would become available in the future to serve as specialists

(2) No alteration in the character of the examination for promotion to Surgeon Commander

(3) The fuller utilization of the services of the Professors of Surgery Medicine and Hygiene in an advisory capacity and as consultants

(4) In the purely administrative side the reorganization and modernization of the method of store keeping and accounting and the co ordination among the larger hospitals of the employment of personnel

(5) The revision and more complete supervision and co ordination of training of the Sick Berth Staff

The President then spoke of the forthcoming departure from the admiralty of the Deputy Medical Director General Surgeon Rear Admiral G L Buckeridge who by his zeal and efficiency and by his courtesy and delightful personality had made himself universally popular

He referred also to the loss sustained by the Service in the retirement of Mr Hooper a loss mitigated by the fact that his services as a consultant would still be retained The President then brought to the notice of his audience the scheme originated by Surgeon Captain Montague Knapp of forming a Central Council of Royal Naval Sick Berth Staff Associations Those Associations had been formed at the three large Naval Ports principally for providing death benefits but also amongst other objects to assist members in obtaining employment on discharge In order that these Associations might receive the organized support of Naval Medical Officers a Central Council had been formed in London under the patronage of Admiral of the Fleet Sir Roger Keyes and himself as Medical Director General of the Navy of which Surgeon Vice Admiral Sir Reginald Bond was the President

This Council would assist and support the three constituent independent Associations more especially to systematizing the arrangements for finding work, and developing as far as possible, new avenues of employment—good results had already been obtained. Funds were required, and it was hoped that medical officers and others would join the Central Council as Vice Presidents, which they could do by giving a guinea. Smaller donations would be gratefully received and these should be sent to the Treasurer, Surgeon Captain Kenny, care of Medical Department, who was present that evening and would be glad to supply any further information. He the President warmly encouraged the scheme and reminded his hearers of the gratitude owing to the Sick Berth Staff for their efficiency, loyalty and *esprit de corps*, and for the help that they rendered to medical officers in the matters of returns, accounts and even journals, help which the opportunity was now given to return.

In concluding his speech the President said: "You have heard of some of the things which have been accomplished and of the things which it is hoped to accomplish: surely we may say with confidence that the outlook for our service is brighter than it has been for many years."

Prior to the dinner, the Annual General Meeting of the Club—Surgeon Rear Admiral J. Falconer Hall, C.M.G., K.H.S., in the Chair—approved the Audited Balance Sheet, and dealt with other items of business.

The following were present:—

President: Surgeon Vice Admiral R. W. S. Hall, C.B., O.B.E., K.H.P.

Members: Surgeon Lieutenant Commander C. F. Abercrombie, R.N.V.R., Surgeon Captain D. J. Aveling, Surgeon Lieutenant-Commander R. J. Bates, Surgeon Lieutenant-Commander M. Patten, Surgeon Lieutenant J. C. Blake, Surgeon Vice Admiral Sir Reginald Bond, K.C.B., Surgeon Captain J. Boyne, Surgeon Captain F. H. Boyden, Surgeon Captain S. Bradbury, Surgeon Captain W. Bradbury, D.S.O., Surgeon Rear Admiral G. T. Brunicb, C.B.E., Surgeon Commander G. D. Brownfield, O.B.E., Surgeon Rear Admiral G. L. Bankeridge, O.B.E., Surgeon Captain J. H. Burdett, Surgeon Rear Admiral C. K. Bushe, O.B.E., Surgeon Commander F. L. Cassidi, R.N.V.R., Surgeon Commander A. P. Clark, Surgeon Captain F. Cook, Surgeon Commander G. B. Cockram, Surgeon Lieutenant H. C. Curry, Major O.B.E., Surgeon Captain Sir A. Craig, Surgeon Commander J. B. Crawford, Surgeon Captain T. Creaser, Surgeon Captain E. C. Cruttend, Surgeon Rear Admiral P. L. Crosbie, Surgeon Captain J. G. Dansey, Surgeon Commander S. W. Davidson, R.N.V.R., Surgeon Lieutenant-Commander P. C. Dunn, Surgeon Rear Admiral H. R. H. Drury, C.B., Surgeon Captain H. G. Dwyer, Surgeon Lieutenant E. C. Dowsett, Surgeon Rear Admiral J. S. Dudding, O.B.E., Surgeon Captain W. H. Edgar, O.B.E., Surgeon Lieutenant-Commander P. Fildes, O.B.E., R.N.V.R., Surgeon Commander H. W. Fitzroy Williams, Surgeon Captain (D) E. E. Fleischer, O.B.E., Surgeon Commander R. A. W. Ford, Surgeon Vice Admiral Sir Arthur Gaskell, K.C.B., C.M.G., O.B.E., Surgeon Lieutenant R. A. Ghee, Surgeon Captain F. G. S. Goodwin, Surgeon Captain C. V. Griffiths, D.S.O., Surgeon Lieutenant H. W. Hales, Surgeon Rear Admiral J. Falconer Hall, C.M.G., K.H.S., Surgeon Vice Admiral R. W. S. Hall, C.B., O.B.E., K.H.P., Surgeon Lieutenant (D) F. E. D. Hollen, R.N.V.R., Surgeon Commander G. H. Hayes, Surgeon Commander F. C. Hitch, Surgeon Captain A. H. Hyde, O.B.E., Surgeon Commander E. C. Hudson, O.B.E., Surgeon Commander H. R. B. Hull, Surgeon Captain H. Hunt, Surgeon Lieutenant Commander (D) T. Kirk, Surgeon Captain M. P. Jones, Surgeon Commander A. H. Joy, Surgeon Rear Admiral W. W. Kerr, C.M.G., Surgeon Captain M. H. Kenny, Surgeon Commander (D) A. Lawrey, O.B.E., Surgeon Captain G. R. McGowan, O.B.E., Surgeon Commander F. L. M. Macllwee, Surgeon Commander G. D. Macintosh, Surgeon Commander E. L. Markham, O.B.E., Lieutenant Colonel N. Howard Mummery, Surgeon Commander (D) W. C. Murray, Surgeon Commander R. W. Nesbitt, Surgeon Lieutenant-Commander C. S. Nicholson, Surgeon Commander T. J. O'Riordan, Surgeon Commander M. E. Parker, D.S.C., Surgeon Commander A. C. Peterson, Surgeon Rear Admiral B. Pickering, Pick, O.B.E., Surgeon Commander (D) J. F. Plaza, Surgeon Lieutenant Commander D. P. Pollard, Surgeon Lieutenant-Commander W. J. Rankine, Surgeon Lieutenant-Commander L. C. Regan, R.N.V.R., Surgeon Captain J. P. Rendall, V.D., K.H.P., R.N.V.R., Surgeon Captain C. F. O. Sankey, Surgeon Captain A. R. Smith, Shand, Surgeon Captain F. Lewis Smith, O.B.E., Surgeon Captain E. E. R. Stephens, O.B.E., Surgeon Captain G. F. Syms, Surgeon Captain G. G. Vickery, O.B.E., Surgeon Lieutenant S. H. Waddy, Surgeon Lieutenant-Commander C. F. G. Wakeley, Surgeon Captain R. M. Wedlan, Surgeon Lieutenant A. C. Wilson, Surgeon Lieutenant-Commander H. N. Willoughby, R.N.V.R., Surgeon Lieutenant-Commander (D) J. T. Wood, Surgeon Commander P. C. Wright. (*Hon. Secretary.*)

FAREWELL DINNER AT R.N. HOSPITAL, HASLAR. April 30, 1935

THE occasion was the retirement of Surgeon Rear Admiral W. W. Kelly, C.M.G., from his post as Medical Officer in Charge of R.N. Hospital, Haslar, and his approaching retirement from active service.

All active service medical officers of the ships and establishments in the port were given the opportunity of being present as hosts. The responses were not the accommodation of the Mess.

An occasion such as this must of necessity be attended by the shadow of parting, but we are confident in this case that to our Guest the blow must have been softened not only by the spirit of the welcome but perhaps still more by the voluntary attendance of so many officers of all branch who seized this opportunity of recording by their presence their appreciation of all the kindly help they had received from Surgeon Rear Admiral Kelly and their regard for the Man.

The usual preliminary mustering opened the evening and continued until dinner being announced, Surgeon Rear-Admiral Kelly escorted by Surgeon Captain Edgar and followed by the remainder proceeded to the Mess room headed by two pipers (Surgeon Lieutenants Alderson and Pratt).

After the toast of The King had been drunk Surgeon Captain Edgar, who was in the Chair, spoke on behalf of the Medical Staff of the Hospital. He said: The Surgeon Rear Admiral is a man of few words and his natural modesty makes him resentful of remarks made about him.

However I find myself on the horns of a dilemma, if I make too few remarks I may not be sufficiently grasping the occasion but I may tend too much the other way and then most may say "He talks too much."

Some years ago while getting here with our officer of our branch we discussed our Service with the usual moan and this officer said "And you sitter all my service here I am of the age of about 51 and not yet my own master." I replied "Well that's life! Great Scots have little flats upon their backs to bite on, these flats have smaller flats and so *ad infinitum*."

And now after a few years I find myself in just the same position as that officer but we are losing our Master. He is one of the defects of our language that the word master is so flexible. In the religious institutions it means a leader—one we must follow—and that we feel about our Surgeon Rear Admiral.

In the Surgeon Rear Admiral we have one without rival in the knowledge of our branch. In his service to peace and war he has held at our disposal knowledge of peace and we know called in any officer of our branch. He has influence as good as anyone I have met—as a doctor as an officer, as one of mankind in all the Services characterized by knowledge humanity and kindness and that touch of humour. As Surgeon Captain Stephenson says—It is a pleasure to be kicked off by the Surgeon Rear Admiral.

You all knew the Surgeon Rear Admiral as well as I and anything I might say would add nothing unto. But his going is something of which we will feel very much. We can always find better words than our own to express our feelings and when I say he is a very great personal loss to me may I quote one line from Pope—

"The wisest and best our guide, philosopher and friend."

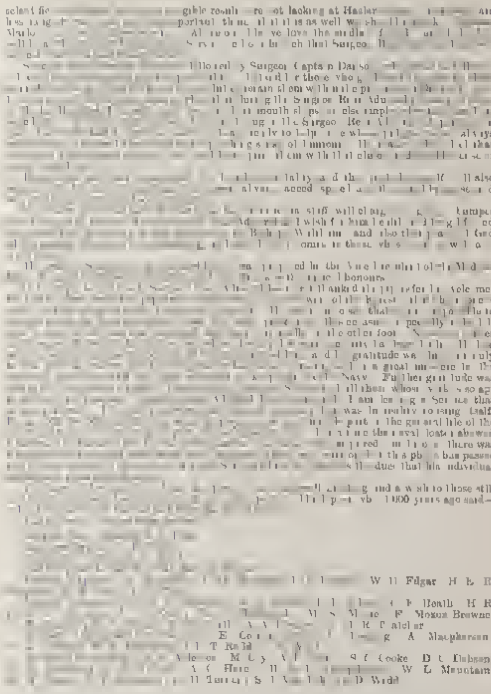
Surgeon Rear Admiral Peck followed and said: Personally I find it a task of considerable difficulty. I form a conspicuous and satisfactory estimate of Surgeon Rear Admiral Kelly's many interests and not by his but the other day I did get a clue to his philosophy and entirely by accident. I was in a room at his house looking at the many books which stand on his shelves. There I make certain very wide range of subjects. I discussed one or two of them with which I was familiar, with him and I soon found that it was not merely a question of possessing a large number of books but of their very much more a question of having read them of having stopped there and thinking them all of having stored up the useful and having discarded the useless.

Like most naval officers he has travelled widely but unlike many naval officers he remembers what he has seen and I don't mean a great deal of the history of the places he has seen.

Again you have not got to be long in his company before you realise the home of people that he has met. As to his wife he has struck up a note of balance of silk of truth read and had quality as and has developed the mouthpiece of an debit balance in his brain for future use. I have learned to a certain extent to set store what he thinks of anyone whose he answers the question: Do you know so and so? The answer—you all know them—speak volumes. "Oh yes, I knew him well." By Jove do I not.

Now to what use has he put this great store of knowledge which he has gathered from his love of literature and his knowledge of men and others? He has devoted it all to his job in life and to his dealings with those with whom he has come to contact. And in the early days when he had his reputation to make with the seniors at all times with his equals and of length to those leaving benefit with his subordinates.

It is rare in a community such as this to point to some tangible result of the labours of those whose time has come to retire it may be bricks and mortar some scheme or plan, a book or a



W H Edgar H E H

Health H E

Miss Marie F Moxon Browne

R F Fulcher

A Macpherson

T Reid

Cooke D C Dobson

W L Mountain

D Wade

NAVAL MEDICAL COMPASSIONATE FUND

[illegible] Annual General Meeting of Subscribers held at the Medical Department of the Admiralty on Friday, April 26, 1935, the following Directors were elected to serve during the [illegible] months:—

To represent the Active List

Surgeon Captain A. F. Malone
Surgeon Captain F. [illegible] Smith, O.B.E.
Surgeon Captain [illegible] Sykes
Surgeon Commander [illegible]

To represent the Retired List

Surgeon Rear-Admiral [illegible] O.B.E.
Surgeon Captain C. T. Baxter

At the [illegible] Meeting of the Fund held on April 26 [illegible] and [illegible]. The following is a summary of the cases relieved.

[illegible] Deputy Inspector General who died in 1899. Her small income [illegible]. Voted £20. Total amount received from the Fund at various [illegible].

[illegible] Deputy Inspector General who died in 1904. She is an invalid [illegible]. Voted £8[illegible]. Total amount received from the Fund at [illegible].

[illegible] Surgeon Captain who died in 19[illegible]. Her only income [illegible] of a widow's [illegible] of £15 a year for each of four children. Voted £[illegible].

[illegible] Surgeon who died in 1899. Both sisters are being [illegible] ladies. Their total income is very small. Voted £[illegible] each. [illegible] from the Fund at various awards £270.

[illegible] Fleet Surgeon who died in 1821. Her small income has been reduced [illegible]. Voted £40. Total amount received from the Fund at [illegible].

[illegible] Surgeon who died in 1911. Has little to depend on apart from a [illegible]. She [illegible] 5s. a week towards the rent [illegible] of a son who [illegible] breakdown and who [illegible] precarious employment. Voted £15. Total amount [illegible] Fund at various awards £[illegible].

[illegible] Surgeon [illegible] died in 19[illegible]. Has had a recent operation. Voted £25. Total amount [illegible] awards £[illegible].

[illegible] Deputy Inspector General who died in 1911. Was very ill during [illegible] employment. Voted £30. Total amount received [illegible] £[illegible].

Notices.

[redacted] Medical Officers to send in [redacted] personal experiences [redacted] the Naval Medical Service [redacted] home and foreign [redacted]

[redacted] articles published [redacted] become the property of the Journal [redacted] unless the author [redacted] reserve the copyright to himself

[redacted] Marriages and Deaths are inserted free of charge [redacted]

All Communications should reach the Editors on or before the 1st of the month preceding the date of issue. Unless clearly written they should be typed in order to avoid mistakes and they should be addressed to the Editors JOURNAL OF THE ROYAL NAVAL MEDICAL SERVICE Royal Naval Hospital Haslar Gosport

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SIR JAMES PORTER

MEMBER [illegible] OF THE NAVY BOARD

Obituary

SIR JAMES PORTER

THE announcement of the death of this most distinguished officer of the Medical Branch of the Royal Navy has been received with very deep regret and with a sense of personal loss by those active and retired officers who had the honour of serving with and under him, for we all felt him to be our "Service father

Sir James Porter was born on December 5, 1851, and received his medical education at Aberdeen, where he graduated M A in 1874, M B, C M in 1877 and M D in 1901 He entered the Royal Navy on September 9 1877, obtaining first place in the entrance examination After a period of instruction at the Medical School then situated at Netley he was appointed on February 5 1878, to H M S *Duke of Wellington*, for temporary service at Haslar Hospital where he remained for a month He next saw service in H M Ships *Alexandra*, *Rupert* and *Orontes* Record shows that he was admitted to R N Hospital, Malta in 1880, from H M S *Orontes*, with undulant fever, he appears to have made a good recovery for he was given the rank of Acting Staff Surgeon in 1881 while in the same ship, and served in her during the Egyptian War of 1882 when she was employed as a Hospital Ship For his services he was awarded the Medal and Khedive's Bronze Star In 1883 he spent four months in the troopship *Wye* after which he joined the Portsmouth Division of the Royal Marines and, in April 1884, departed with the Royal Marine Battalion for Egypt His first duty was in charge of Royal Victoria Hospital, Suez but he was with the Battalion when it was engaged in the defence of Suakim, and in operations in the Eastern Soudan, where he took part in the actions at Hashieu, To Frok the attack on a convoy of Guards and Royal Marines and the taking and burning of Tamai During this period it was reported that ' His energy readiness of resource and decision of character were of great service in the Field and that, "he deserves special commendation for his zeal and ability He received two clasps to his Egyptian Medal for this period of service

From September 1884, he served in H M Ships *Alexandra Pembroke*, *Calypso* and *Volage* until August 1886, when he was appointed to R N Hospital Bermuda He remained there until January 1889 during which year he served in three ships, *Bellerophon*, *Duke of Wellington* and *Marathon* In September 1889 he was promoted to Staff Surgeon and

[illegible] HMS [illegible] month Mediterranean then commanded by Prince Louis of Battenberg In 1897 he returned to the West Indies his appointment being to HMS *Terror* for Bermuda Dockyard, where he succeeded Staff Surgeon T D Gimlette (now Sir Thomas Desmond Gimlette, K C B (ret)) who subsequently succeeded him as Inspector-General at R N Hospital Haslar While in this appointment he was reported upon as "a most zealous and devoted attendant on the many wants of the mixed community of Ireland Island

In April 1895 he was appointed to H M S *Britannia* and for Cadets Sick Quarters, where he spent just over two years

In 1897, he joined H M S *Doris* Flagship of the Cape Station and while still in this ship was, in March 1898, promoted to Fleet Surgeon In June 1899 he landed at Cape Colony, near the Orange River, and in October 1899 joined the Naval Brigade as Senior Medical Officer After being landed for the defence of Stormberg he later joined the 1st Division of the Army (Lord Methuen's) and took part in engagements at Belmont, Graspan with the storming party of the Naval Brigade Modder River and Magersfontein He, next, was with the 6th Division under General Kelly Kenny, and was present at the relief of Kimberley, including the action of Klip Drift, the Paardeburg engagements, Poplar Grove, Driefontein and the entry into Bloemfontein Following this, he appears with the 11th Division (General Pole-Carew), and served with it from Bloemfontein to Belfast, during which time he was present at the following engagements Vet River, Zand River, Johannesburg, Pretoria Diamond Hill and Belfast After the last action, he joined General French's Cavalry Division and proceeded with it to the capture of Barberton Among the reports of his activities are "Fleet Surgeon Porter, on the Field of Graspan, was well up to the Front with bearers and did very fine service with the wounded" "Fleet Surgeon Porter did gallant and most excellent service under trying conditions he was under fire nearly the whole time."

For these services he received the South African Medal with eight clasps and was specially promoted to Deputy Inspector-General of Hospitals and Fleets in October 1900

In June 1901, he was appointed to R N Hospital, Haslar, and in 1902 was honoured with the award of the Military C B

In December 1902, he was appointed to R N Hospital, Chatham, and was also concerned with the new hospital then under construction

In 1904, "Their Lordships expressed their appreciation of the zeal he had shown in dealing with questions raised in connection with the new hospital at Chatham

In June 1904 we find him in Medical Charge of the R N Hospital Gibraltar

In October 1904 he was promoted to the rank of Inspector General of Hospitals and Fleets and was appointed in charge of R N Hospital

Haslar, in July 1907 where he remained until May 1908, when he became Medical Director General of the Navy He held this office until May 1913 when he retired at his own request on expiration of his period as Medical Director General His active service, however was not yet completed, for on the outbreak of war in August 1914, Sir James rejoined for further service and was appointed to H M S *Pembroke* for special duty in connection with the transport of wounded at home and June 1915 saw him on a tour of inspection of Naval Hospitals (including temporary hospitals) and Hospital Ships in the Mediterranean in special connection with the transport and treatment of wounded In December 1915 Their Lordships expressed their appreciation of the valuable services rendered by him and of his strenuous efforts to organize successfully, in a limited space of time and under many difficulties the transport of sick and wounded on the Mediterranean Station and also informed him that "the Army Council have requested the Admiralty to express to him their thanks

Sir James reverted to the retired list on November 4 1917 but was a constant attendant, whenever his health permitted at the Annual Dinner of the Royal Naval Medical Club

In addition to the Egyptian, South African and Great War Medals Sir James had many honours conferred upon him He received the C B in 1902, K C B in 1910, K C M G in 1916, was appointed Honorary Physician to His Majesty the King in 1909 and received the degree LL D of Edinburgh in 1912

Surgeon Vice Admiral Sir Arthur Gaskell writes —

"I find it very difficult to do justice to the greatness of Sir James Porter My friendship for him is so great that nothing I can write seems to be adequate Big Jimmy was called him, a name inspired by warm affection and respectful admiration This he certainly was in every sense of the term for he was tall and his physique magnificent, his bullneck, square jaw and firm mouth betokened his strength of character and determination, his outlook on life and his dealings with his fellow men were always big He stooped to do anything petty He was a Big Man

His sense of duty was of the highest all his actions were for the good of the Service he never sought selfish aims, and throughout his career never courted popularity

In 1899, during the South African War he first became really prominent He displayed courage almost to the point of recklessness when he felt that the wounded required him So efficient were his arrangements that when the war was over he received special promotion to Deputy Inspector General and was awarded the military C B From this time he was a marked man

His work at Haslar showed him to be a skilful and careful surgeon possessed of a sound knowledge of his professional work At the old Chatham Hospital he not only carried out the duties of Principal Medical Officer but he accepted the large extra task of superintending the whole

[illegible] successful was he in this that, [illegible] mined as one of the best hospitals [illegible]

[illegible] ful [illegible] ty unselfishness and a devotion to duty were [illegible] acteristic. He left every job he took on far better than he found it. He was indeed a fine man and it is not surprising that he rose to the highest position in the medical branch of the Navy.

Sir James Porter and Prince Louis of Battenberg were great friends. Each admired the other's character and ability, and when they were both serving at the Admiralty, Sir James could always depend on the loyal support of his friend.

I would quote from Dr Alington's recent tribute to Viscount Bridgeman, as his words so aptly apply also to Sir James Porter: 'His opponents knew that he would always be fair to them and that disagreement would never mean the absence of sympathy. He loved a good fight but his fights left no bitterness behind.'

Sir James was a sound judge of character, and he possessed the rare gift of seeing the good points in his fellow men without being blind to their failings.

A record of his achievements as Medical Director General would take up too much space to enumerate in detail. His term of office was marked by greater and more continuous improvements than have ever been seen before or since. Those of us who served in hospital ships during the War were grateful for the wonderfully thorough preparations he had made.

He recognized that the Navy must have good medical officers. It was not only obviously good economy, but it was also an honourable fulfilment of the undertaking to give the naval personnel a sound and sufficient medical service. He, personally, interviewed every candidate and enlisted the help of the Deans of the medical schools. Of course at times he made mistakes—who does not? The man who never makes a mistake never makes anything.

He took steps to ensure that the medical officers of the Navy should not grow rusty. He took a great interest in the post graduate courses, he established the Naval Medical School at Greenwich College, he encouraged the study of preventive medicine and helped as many officers as possible to take the Diploma in Public Health. Health lectures and instruction in first aid received his close attention and were consequently markedly improved. He raised the prestige and status of the naval medical officer and saw that they were worthily represented at their headquarters at the Admiralty. He ruthlessly weeded out all medical officers who failed to reach the standard he had set. He fostered *esprit de corps*. He gave his blessing to the naval medical annual dinner and never failed to attend or send his good wishes. Last April the Dear Old Man, though stricken with years, sent a cheery telegram regretting that he could not be present this

[illegible] Alas! how [illegible] which we would give him

The NAVAL MEDICAL JOURNAL and the Naval Medical Benevolent Fund were his beloved children

He retired in the middle of 1913 but was back again when War broke out, ready to serve under his successor in any capacity He reorganized the first hospital trains with his usual skill and success Later when the sea transport of the wounded from Gallipoli disastrously broke down he was sent to put it right With his characteristic energy and persistence, he soon brought into being such an efficient reorganization of the medical troopport by sea that it went smoothly from its first severe test at Suvla and Anzac on August 6, 1915 For his services he was rewarded with the K C M G

After the War he and Lady Porter lived at Bournemouth, delighting in having their grandchildren with them whenever they could be spared Lady Porter died in 1932 and Sir James was never the same man again He left Bournemouth and went to live with his daughter, Mrs. Kaye, in Yorkshire Her devotion to him helped to bring happiness to the declining days of his life

Now death has claimed him who strove so valiantly for the good of the Navy and its medical service and achieved so greatly We have lost a very dear friend—a leader and a MAN. His memory will long be treasured by those who knew and therefore loved him

The Medical Director-General Surgeon Vice-Admiral R W B Hall writes —

To all the medical officers of the Navy who served with, or knew Sir James Porter his death has brought the deepest regret and the feeling that a most important link in the chain of their naval life has been severed

It may be said with truth that no other officer of the Medical Branch of the Navy has won so full a measure of admiration respect and gratitude as was given to Sir James

His devotion to the Navy and to the Branch of which he became the head was intense and his every thought and effort during his period of office as Medical Director-General was for the improvement of that Branch for the increase and maintenance of its efficiency and for the attainment of the highest standards of professional and technical service At a critical period of its history he introduced into the Naval Medical Service important and far-reaching reforms the efficiency and smooth working of all the medical arrangements for the Fleet at the outbreak of the Great War were due very largely, to his foresight and to his careful and detailed preparation

It was inevitable that a man of his strength of character and personality should at times, have 'got across the bows' of some of those with whom he came in contact but in all his dealings he was scrupulously fair, broad

To some, conscious perhaps of shortcomings, an interview at the Admiralty with Jimmy Porter may on occasions have been a trying experience, but subsequent consideration would always bring the knowledge that just treatment had been given without personal animosity

Sir James was indeed a Great Man, to whom the deepest affection and gratitude of the Naval Medical Service were not only due but were wholeheartedly given We of the present day owe to him much of the efficiency high standard and satisfactory conditions of the Branch to which we belong, and by those who had the privilege of his friendship and the stimulus of his example, his memory is cherished

VOLUME XXI [illegible] No. 1

Journal
of the
Royal Naval Medical Service.

Editorial.

In our April issue we gave an explanation of why we publish an Editorial, and the reasons to our mind still hold good. We believe that it, at least, is read.

The outstanding event since our last issue went to press, was the review of the Fleet by His Majesty the King at Spithead, on July 16. The Fleet consisted of H.M. ships, ships of the Mercantile Marine, trawlers, yachts, lifeboats, &c. In fact, representatives of all those who more than assisted the Royal Navy during the Great War and who, during that period, were part of the Royal Navy.

It is not for us to pass comment but whatever may be the horrors of war it does promote comradeship amongst those who, otherwise seldom if ever, meet. It was good to see the uniform of the Royal Naval Reserve and the Royal Naval Volunteer Reserve again and to know that though we so seldom see it the wearers are still very much in existence and efficient as ever.

The Naval establishments of the Port all entertained guests and, by this means, enabled others to share the occasion with them. The Royal Naval Hospital, Haslar, gave a garden party and viewed His Majesty's Inspection from the hospital grounds. The Guests included the Medical Director-General and Mrs. Hall, Medical Officers, their wives and families and Nursing Sisters from the other Home Medical Establishments.

We had envied London, the Royal Air Force and the Army their weather on those occasions when His Majesty visited or inspected them and we were only anxious in this respect; however, Royal weather obtained, and this Royal Review will remain an outstanding event in the history of the sea-going folk of the Nation.

It is with personal regret that we record, elsewhere in this issue, the retirement from Active Service with the Medical Branch of the Royal Navy of Sir Humphry Rolleston, and this regret we know is shared by all Naval

Medical Officers who have had the honour and privilege of knowing him Many of us have had the pleasure of meeting Sir Humphry in his official capacity as Consulting Physician to the Royal Navy, of appreciating the kindly way in which he has directed us in the right line of thought, and given to us the benefit of his inexhaustible store of medical knowledge The majority of the more senior of us, too, remember him in uniform as Surgeon Rear-Admiral during the war years Reference to his writings in our Journal indicate that his interest in our branch of the Service was not only in the active practise of medicine, but in our branch as it was and is Again amongst our Seniors, there are few, if any who have not met Sir Humphry in his capacity as Examiner in Medicine As examinees our opinion of him in this capacity must be biased by the results of our meetings We had the pleasure of such a meeting on four separate occasions In spite of his official retirement, we ourselves, and on behalf of all his friends who are still serving take this opportunity of expressing our thanks for his many kindnesses for his generous help, for his appreciation of our difficulties and for the active interest he has taken in our Branch We hope that in spite of his official retirement, Sir Humphry Rolleston will accept the fact that as a friend, we regard him as being always on the Active List

We ought to apologize for being too persistent in respect of the Navy Medical Compassionate Fund, but we do not

Simple things are frequently overlooked, and in this respect we must plead guilty We have felt somewhat disturbed as to the results of the Short Service System on the subscriptions to the Fund, until it dawned upon us that Medical Officers who are subscribers can and do remain subscribers after they have left the Service This applies to Short Service Medical Officers who leave the Service at the expiration of their Short Service period and provided they keep up their subscriptions, their descendants should it be necessary, are equally entitled to receive assistance from the Fund Their interests are looked after by two retired medical officers who are appointed as Directors of the Fund and attend both the General and Quarterly Meetings

Elsewhere in this issue we publish a letter which we received from the Countess Roberts, D B E who is Chairman of the Incorporated Soldiers and Sailors Help Society We ask our readers to turn to it—it speaks for itself, and there is little that we can add There is and should be friendly rivalry between the Army and the Navy and yet those of us who have been privileged to serve with the Army during the War know that when the two are together they are ' IT ' We of course, quite realize that it is the Naval element which gives the added zest!

We have charities which are our own but this which is a debt to the Army and Navy together, should be the most efficient of them all

Original Articles

THE WINNETT-ORR TREATMENT OF OSTEOMYELITIS AND COMPOUND FRACTURES

By Surgeon Captain H R B Hull R N

For the last year, I have been treating all cases of osteomyelitis and septic compound fractures by the Winnett Orr method and I am tremendously impressed by its advantages over older methods I had previously used the Carrel-Dakin method which requires constant care, frequent disturbance and very skilled team work Mr Orr's method is simple and can be carried out, as John Ridlon says, by a clumsy surgeon and a lazy one.

The method as Orr described it in his book in 1929 [1] is as follows —

(1) Make a fairly large incision over the infected area Spread apart the skin, muscles, fascia and periosteum just far enough to afford access to the diseased area, and no farther

(2) Chisel a window, into the infected area of the bone, large enough to enable all diseased and necrotic bone to be removed, all pus pockets reached and to allow that no overhanging edges of bone are left—the bone is thus 'saucerized'

(3) Clean out the diseased area gently with a curette or gouge, taking care not to damage the tissues undergoing repair

(4) Dry the cavity and wipe out with 10 per cent tinc iodi followed by 95 per cent alcohol

(5) Keep the entire wound wide open, but not tightly, with a sterile paraffin gauze pack, cover this with a dry sterile pad and bandage

(6) Now perform any reasonable manipulation necessary to place the parts in their correct anatomical position for splinting—abduct the arm 90° in humerus cases, dorsiflex and supinate the hand in forearm and wrist cases, dorsiflex the foot to a right angle with the leg in leg cases

(7) Apply a plaster of Paris cast if possible, if not use a suitable splint so that the parts are thoroughly immobilized in a comfortable and correct position Additional weight and pulley traction may be used especially in those infected bone lesions associated with fractures and old fracture deformities which are being corrected at the same time

(8) The plaster cast is not to be split nor are windows to be cut until wound dressings are necessary The wound is not to be dressed at all for three or four weeks except in the case of a rise of temperature or other signs of acute sepsis

Orr was early impressed by the fact that, after placing a joint in plaster following an open operation, a mild post-operative infection which had

[illegible] under [illegible] ... [illegible] month later He [illegible] and the [illegible] soft parts did better with prot[illegible] than with irrigation and movement He maintained that —

(1) The use of antiseptics in the treatment of infected wounds had been developed to the point of abuse

(2) It was not generally appreciated that infected wounds heal without the applications of antiseptics of any kind

(3) Wounds if properly protected will heal more satisfactorily without daily dressings or irrigation with antiseptics

(4) The important factors in securing these better results are (a) Primary asepsis or antisepsis when necessary (b) adequate drainage (c) immobilization of injured parts, (d) protection of wounds against disturbance and infection

He went back to Lister to find out the reasons for antiseptic treatment of wounds and maintains that Lister thought that our battle was against infection originating entirely from outside he did not recognize hematogenous infection Since the time of Lister the usual theory in treating wounds has been that infection must be met in the wound and treated with antiseptics Long before surgeons and antiseptics, infections of all kinds had been successfully overcome Fossil remains show healed lesions of bone and joint infections Hilton (1807 1878) and Thomas (1837-1891) demonstrated the ability of the body to deal with infection Hilton showed the value of rest and proved that prolonged rest was the therapeutic agent of importance Thomas was the first to work out a satisfactory method of rest and invented the appliances by which this could be attained Lister showed the way to prevent and control the processes resulting from the infection of wounds and taught that antiseptics create conditions favourable for natural healing In recent practice the value of rest, in its last sense has been forgotten, and Listerism has been construed to mean active chemical antiseptic treatment of wounds

At first Orr only used his method in chronic cases, but he reasoned that if, in an acute case the amount of infection could be lessened by a suitable drainage operation and if the patient could be protected against further infection or otherwise assisted towards recovery by correct splinting, he might be relied upon to combat whatever small amount of infection remained

He maintains that the frequent and often unnecessary redressing of wounds causes secondary and mixed infections Such dressings are made chiefly to satisfy curiosity about what is occurring underneath the original dressing and to satisfy those who have an urge to be continually doing something about a wound Aseptic dressings in the first place, will make for a minimum of infection and thus the patient can combat for himself subsequent dressings only serve to disturb natural processes of healing and to cause new infection He therefore advocates that the wound should be

kept wide open by means of a sterile paraffin pack which should be left undisturbed A paraffin which melts at 51° is used—a high melting point is necessary to produce a mass that will keep the wound open and will not melt and run out of the wound at body temperature A sterile tin full of paraffin is kept this is fitted with two metal rollers around which rolls of gauze of various widths are wound, when cool these are embedded in the solid paraffin and the tin can be packed and carried anywhere This gives us a sterile gauze well permeated with sterile paraffin When this paraffin gauze is used the paraffin does not adhere to the bone and the dressing is pushed out in the process of healing Before use, the tin is heated the gauze end is picked up by two dissecting forceps, and the desired length cut off by an assistant Narrow gauze is packed into the cavity and the whole wound and area around covered by squares of the paraffin gauze Wool and bandage are applied over this and the part is put up in plaster Discharge mixed with paraffin will eventually soak through the plaster and later there will be a characteristic smell The odour is due to the secretions which become absorbed by the wool under the plaster If the patient can be nursed out of doors so much the better *he* does not complain of the odour but his visitors do Sometimes the discharge is enough to trickle through the end of the plaster but neither this nor the smell should be any source of worry so long as the patient is comfortable and the temperature remains down

Our cases are dressed once a month, and they usually do not begin to smell until two weeks after dressing Efficient protection of the wound and adequate immobilization of the part should go hand in hand until healing is practically complete If there is a discharging sinus near a joint the control of this part should be maintained not only until sound healing has occurred but until the patient is well past the danger of a relapse If any septic destruction of the joint articular surface occurs ankylosis is to be expected and is on the whole rather to be desired The patient who heals up after an extensive inflammatory trouble of this sort with scarring around and into the joint is very liable to inflammatory recurrences if any considerable amount of movement remains

The old teaching was to avoid extensive operation in acute osteomyelitis before the formation of sequestrum and involucrum—where suppuration occurred we were told to drain If there was no actual sequestrum, procedure beyond drainage was to be avoided, but sequestrum results from the spread of an original infection which has not been adequately drained, and may be avoided by thoroughness in drainage If possible, the primary operation should be the only one performed and since this is true it must be admitted that in some cases particularly of late chronic osteomyelitis it is better to await the formation of sequestrum

The use of some antiseptic in the primary operation is advocated Orr used tinct iodi and alcohol It may also be desirable to keep down fermentation which causes odour, some surgeons incorporate chlorine in the plaster for this purpose

When an [illegible] the tissue is opened with an open joint is exposed. At first sight it would seem that to pack such a cavity with [illegible] gauze would be [illegible] but clinical results have proved that this is not the case and a packed drainage has been found the best and most successful

To recapitulate the more essential components of the methods include —

(1) Primary extensive osteomy

(2) Primary asepsis or antisepsis

(3) Provision for adequate drainage wide open sterile non-absorbent packs to the depth of the infected region

(4) A post-operative dressing which protects the wound and precludes re-infection, the dressing is not changed for some weeks

(5) Avoidance of antiseptics and chemical irritants in the after treatment of the wound

(6) Immobilization, rest in the correct anatomic position—the first precaution in fracture cases.

It has been found that wide spaces over the tibia, which previously had to be covered with plastic flaps, will heal up well with prolonged immobilization and paraffin dressing It is important, in correcting deformities in the presence of infection and in compound fractures, to bring the part into as good a position as possible with a single corrective movement and not in a series of 'pump handle' movements This treatment, by rest with the limb in its correct position, does prevent muscle spasm which some other methods do not The objection that immobilization produces stiffness is argued against by Dr Albee who says

Immobilization does not produce permanent atrophy Pain from lack of immobilization is more likely to do so, for pain causes continuous spasm of the muscle and this produces atrophy Many times efficient immobilization, if proper physiotherapy is carried out afterwards, will prevent permanent stiffness of the joint rather than produce it Most stiffness and atrophy is due to extension of infection into joints and structures round them The amount of stiffness will only be as much as is caused by inflammatory adhesions bony or otherwise

John Ridlon in his preface to Orr's book gives two very apt quotations one from Talleyrand. Be zealous but not too damned zealous and another from Alonzo Clark, Don't treat your patients too much Let them get well if they can'

Contrast a properly applied Orr dressing with rest and immobilization following thorough drainage which has eliminated the factor of pain with the screams which heralded the preparations for the daily dressing of children with osteomyelitis under the old régime

I have seen a number of cases treated by this method by Mr A G Ord F.R.C.S. the Orthopædic Surgeon at the Portsmouth Royal Hospital At the end of a month, on taking off the dressing, it is usual to find that the gauze pack has been pushed out and the wound filled with red, healthy looking

[illegible] These in not disturbed, another paraffin dressing is applied in I next month the wound is found to be completely or almost healed

In septic compound fractures the correct position which gives relief of spasm and pain must be obtained and the best time to obtain length position and immobilization is immediately following the injury If there is inadequate immobilization there will be muscle spasm, pain and, often a poor result Fixed traction is the ideal treatment, not elastic traction by weight and pulley Therefore any extension and fixing apparatus, such as pins wire, ice tongs or adhesive straps, must be embedded in the plaster cast, thus fixing the constant pull of the appliance Weight and pulley traction permits a certain amount of irritative motion of the injured parts There is a battle between the elastic traction on the one hand and the spasmodically contracting muscles on the other

In putting up a lower limb, with the patient on a fracture table, if strapping extension is to be used the traction is first instituted by a bandage about the foot The fracture is pulled out by strapping extension until the limbs are of equal length The cast is then applied as low on the extremity as the ankle After the plaster has sufficiently set, traction having been continuously maintained by the foot bandage, the traction ropes are cut from the holding device turned back against the leg portion of the cast and imbedded in the cast by plaster bandages, thus anchoring them and maintaining the traction After this the foot bandages may be released without loss of length of limb and the cast completed with the foot at right angles to the leg I have preferred to use pins, these are embedded in the cast after the fragments have been manipulated and fixed in the correct position

In a difficult fracture of the femur one pin inserted above the knee joint from side to side and another from front to back through the top of the femur about ½ in beside the great trochanter, will hold the fragments in plaster in fixed traction

Cases

Case 1 —Aged 11, transferred from the medical side on August 29 with a pyogenic infection of the right hip joint following pneumonia X ray showed an area of absorption in the neck of the femur due to an embolic abscess The limb was in position of adduction and semi flexion He was put up with a strapping extension on a Thomas splint with a 6 lb weight and the leg straightened out By September 10, there was palpable swelling of the right hip-joint and tenderness on deep pressure X ray showed increased rarefaction of the neck of the femur and evidence of sequestrum formation The head of the femur and upper part of the acetabulum showed erosion

Operation September 15 —Through a curved incision (Smith Petersen) the front of the right hip joint was exposed On reaching the capsule thick greenish yellow pus came away The upper part of the neck and the upper third of the head of the femur were uncovered soft in consistency and covered with grey granulations These were entirely removed, together with the upper part of the acetabulum and ilium where the ilio femoral ligamentis attached The remaining bone appeared to be very healthy oozing bright red blood The cavity was

then packed with [illegible] paraffin gauze and covered with [illegible] The limb was put up in plaster with the leg in [illegible] For the next three days there was considerable trouble from [illegible] tension under the plaster By September 25 pressure sores had developed over the [illegible] pressure of the plaster these were treated by cutting away the plaster over them This plaster was left on for a month and, on October 13 it was removed The paraffin pack had been completely extended the wound was healthy and covered with bright red granulations and had largely filled in There was definite ankylosis in good position A wound was repacked with paraffin gauze and the leg put up in plaster again A window was cut over the sacrum to enable the pressure sores to be dressed X ray at this time showed some callus formation with no evidence of active disease After another month on November 10, this plaster was removed The wound had almost entirely filled in the plaster was left off and a small paraffin dressing applied *x* ray showed ankylosis complete By November 20, the patient was up in a chair and by November 28 about on crutches He then most unfortunately slipped on a polished floor, fell, and cracked the neck of the femur This meant that he had to be put up in plaster again for another two and a half months After that period, *x* ray showed no displacement bone appeared healthy, ankylosis of the head apparent and no sign of sequestrum On March 30 he went on sick leave He could then walk well with two sticks and was getting accustomed to a stiff hip X ray, then, showed firm union, no displacement, and the sinus had dried up

Case 2—Aged 15, admitted on August 11, with acute osteomyelitis of the right foot The foot was opened up and the 5th metatarsal drilled, counter openings were made and Carrel Dakin treatment carried out The condition did not improve and on September 15 it was explored and some dead bone removed

On October 23 the patient was definitely worse *X* ray showed loss of substance of the cuboid anterior end of os calcis and the base of the 5th metatarsal

He was then sent to me to try the Winnett Orr treatment The wounds were packed with paraffin gauze and the whole foot put up in plaster The dressing was very comfortable and was left until November 13 when his temperature went up to 103° F and there was œdema of the foot The plaster was removed the sole of the foot was found to be red and swollen and the foot was discharging through two sinuses one of 3 m. diameter on the outer side and one of 1 m. diameter below it These sinuses were cleaned with spirit and lightly packed with paraffin gauze The sole of the foot was not opened The foot was then put up in plaster as before. The temperature settled down in three days This dressing was undisturbed until December 29 when it was removed all inflammation was found to have disappeared and the larger sinus completely healed *X* ray showed new bone formation and no active disease The plaster was then left off and a dry dressing applied

By January 17, the foot was healed The patient was fitted with an arch support and allowed to walk By February 28 he was walking well and returned to duty

To show what can be done I insert the following case who was treated by Mr Ord at the Portsmouth Royal Hospital The *x* ray photographs show the state of the elbow before operation and at the present time

Case 3—Patient aged 54

History—Patient was admitted to hospital with compound fractures of the right elbow





Examination.—There were extensive lacerations round the right elbow especially over the external epicondyle. All wounds were very dirty. X-ray showed severe comminuted fracture of the lower end of the humerus extending into the elbow joint. There was gross displacement of all fragments.

Operation.—General anæsthetic. Patient was placed on Mr. Ord's orthopædic table and the arm extension mechanism used. The hand was fixed to this with the elbow flexed at a right angle. A wire was fixed through the olecranon and extension carried out to the line of the humerus. An open reduction of the lower end of the humerus was then performed. The elbow joint was thoroughly washed out with saline. The arm lacerations and joint were swabbed with absolute alcohol. Paraffin and gauze packing were passed round the fractures and brought to the surface of the wounds and were applied round the limb for some distance from the elbow. The whole elbow was fixed in a light plaster splint and the arm fixed in extension with the elbow flexed.

Progress.—Two weeks later the paraffin dressings were removed, healing was satisfactory and the wounds were much cleaner.

Paraffin dressings were re-applied.

In another two weeks the dressings were again changed, this time no packing was used.

Five weeks after the operation massage was started.

At present he has 40 per cent. movement of the elbow joint.

REFERENCE

1. Osteomyelitis and Compound Fractures. By H. Wilmot-Orr, M.D., F.A.C.S. Published by Henry Kimpton, London.

TOXIC NEPHRITIS FOLLOWING EXPOSURE TO CARBON TETRACHLORIDE AND SMOKE FUMES[1]

HON. SURGEON CAPTAIN SHELDON F. DUDLEY, O.B.E., M.D., F.R.C.P., D.P.H., D.T.M., R.N.

THE cases to be described occurred in two of H.M. ships subsequent to extinguishing fires by sprays of carbon tetrachloride. That the contents of the fire extinguishers used were practically pure carbon tetrachloride, (CCl_4), was confirmed by chemical analysis of samples of the fluid which was issued for refilling the sprays.

In certain respects these cases are unique as no such detailed examination has heretofore been made of disasters alleged to have been due to the use of this type of fire extinguisher sprays. In the few cases which have been previously reported, grave doubt has been expressed as to whether carbon tetrachloride itself was really the responsible agent.

The clinical aspects of the poisoned men and a short description of the events which led to their condition will first be given, followed by a brief discussion of some practical points raised by these accidents.

Case 1.—Aged 44. About midday on April 9 the patient noticed smoke coming out of the central store office in one of H.M. ships. The fire was apparently caused by someone having thrown a lighted match or cigarette into a

[1] Published in *The Journal of Industrial Hygiene*, vol. xvi, No. 5, May 1935, and reprinted by kind permission of the Editor.

[illegible] to the mitral [illegible] oedema of lungs and face disappeared, and his pulse rate was 68 and, but for a sense of exhaustion he felt physically and mentally fit.

The blood picture was —

	May 11	May 20
Red cells	4,160,000	4,850,000
Haemoglobin [illegible] per cent.	70	80
White cells	10,400	13,800
U.M.N. per cent.	28	32
Lymphocytes per cent.	70	60
Large mononuclears per cent.	4	7
Eosinophiles per cent.	3	1

There was thus some leucocytosis and a striking relative lymphocytosis. On April 20 his systolic blood pressure had dropped to 155, the diastolic to 90, by May 10 the corresponding figures were only 100 and 80. Details of the urea content of the blood and urine, and daily quantity of urine are given in the Table and fig. 1. The graph shows how the blood urea reached its maximum on April 20, twelve days after exposure to the fumes from the fire and extinguisher, and two days after the epileptiform seizure. The quantity of urine began to increase three days prior to the maximum blood urea, and continued increasing for a fortnight. As polyuria developed the concentration of urinary urea fell with the blood urea. As a result, the daily total amount of urea excreted in the urine remained fairly constant while the blood was getting rid of its excess of urea. Throughout the patient's stay in hospital the specific gravity of the urine was about 1010. There was never much albuminuria, a faint trace was discovered for the last time on May 10 but no protein was detected on May 18 and four times subsequently. Blood, bile, casts or leucin and tyrosin crystals were never found. On May 29 a urea concentration test (15 grm. urea in 100 c.c. of water) gave this result:

Hours	Per cent. urea
0	1·2
1	0·4
2	1·1
3	1·8

Therefore, according to the usual interpretation, the kidneys' function was below normal. The patient went on sick leave on June 2. He was readmitted on July 5 for further investigation. He complained of a feeling of tiredness and insecurity during his leave and stiffness in his legs. Physical examination revealed

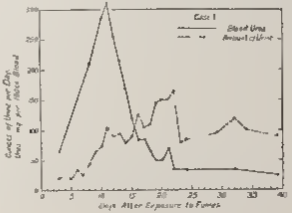


FIG. 1.

no abnormalities except some long standing rheumatoid creaking of the knee joints and slight tremor of hands. The following observations were made

[illegible] per cent urea 1017 S.G. [illegible] per cent [illegible] 1015 S.G. No trace of protein casts or abnormal constituents

URINE CONCENTRATION TEST

Hour	Specific gravity
0	1 [illegible]
1	1 [illegible]
2	1 [illegible]
3	1 [illegible]

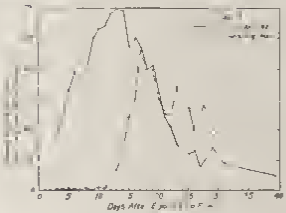
Blood—[illegible] 30 mg. per 100 c.c. [illegible] per 100 c.c. Red cells 3,980,000 per c.mm. haemoglobin 75 per cent. [illegible] 9,000 per c.mm. P.M.N. 78 per cent. lymphocytes 21 per cent. [illegible] 7 per cent. basophiles 1 per cent. Wassermann and [illegible] negative. Blood pressure 130/80.

These results show no definite evidence of [illegible]. The blood showed some secondary anaemia and some relative lymphocytosis and as the patient did not feel very ill he was given [illegible] sick leave, at the end of which he was found to have recovered his normal state of health and no signs of any disease were discovered.

Cases 2, 3 and 4.—The events which preceded the admission to hospital of Cases 2, 3 and 4 were as follows. At 10 p.m. on May 3, 1933, a hole broke out in the chart house of a destroyer. The hole was [illegible] in diameter and was punched in the bulkhead forming the forward wall of the chart house coat, which was hanging on the bulkhead coming to contact with an electric radiator. The chart house was only ventilated by the door on deck. The fire spread from the rear coat to the bulkhead which [illegible] of which chart house was covered with three-ply boards. Numerous [illegible] electric wires ran across this bulkhead to serve the navigation and gear [illegible] control of the destroyer. These were fused and the motion load ran [illegible] on to the dock. A piece of felt wood panel and electric cables about to ignite were destroyed before the fire was put out. Two men, Cases 2 and 3, alternately entered the chart house with extinguisher sprays of which they used [illegible] 6½ cylinders. One stopped in the chart house for as long as he could until [illegible] and smoke before handing the extinguisher over to the other who immediately got fresh air outside. The time of exposure to the fire extinguisher fumes would be very roughly ten to fifteen minutes, as it took about half an hour to get the fire under control. Case 4 states that he was lying on the deck with his head and shoulders just inside the chart house door trying to direct the electric cables. This man described how he saw the spray from the extinguisher impinge on the [illegible] bulkhead from which it rebounded like a cloud of fumes over the hands and shoulders of Cases 2 and 3. The vapour then greatly diluted sank to the dock. Case 4 in spite of being on the deck must have been exposed to a less concentrated vapour than the other two cases as coming in the direction of the air currents, the fumes tended to be carried away from him. According to Case 3 however Case 4 was employed for most of the time well outside the chart house holding an Aldis light for the others to work by.

Case 2, aged 31. This case turned in at [illegible] after the fire had been extinguished. The next day he felt quite well and had a severe headache and [illegible]. At 8 p.m. he started to vomit dark brownish matter. His temperature was [illegible] to 103° F. and pulse rate 96. His bowels had been opened that morning and the motion appeared normal. The patient was sent into hospital at 1 p.m. on May 5 with the provisional diagnosis of gastric influenza. The patient had been attached to the Fleet Air Arm and was therefore physically above the average. He knew he could hold his breath for two minutes and that he had an abnormally low blood pressure for his age. He stated that he had never been [illegible] joining

[illegible] for two [illegible] August 1912 [illegible] 100·4° F., pulse [illegible] other physical [illegible] His only com- [illegible] and feability to [illegible] getting up that [illegible] and colour. The [illegible] exhibiting a [illegible] recovries but no [illegible] morning, May 6, [illegible] that no stones or [illegible] The cause of the [illegible] was guzzling until it was



[illegible]

[illegible] the [illegible] twice alleged to have [illegible] the extinguishers was carbon [illegible] of the organic halogen compounds. The diagnosis of cardiac [illegible] was made and [illegible] patients were given a very grave prognosis. [illegible] second opinion and were advised to call in Sir William [illegible] afternoon and confirmed the [illegible] pneumonia and gave [illegible] restriction in the subsequent [illegible]

S[illegible] [illegible]—For two days after admission the patient continued to vomit [illegible] mouth. The vomit always contained dark brown altered blood (coffee-like the black vomit of yellow fever). The patient remained [illegible] on the third day in hospital [illegible] continued to vomit [illegible] four hours until May 3 and the vomit nearly always contained [illegible] blood. His motions were free from visible blood until May 10, [illegible] and May 20 there was very considerable melæna after which they [illegible] normal in colour until the patient's discharge to Leys on June 9. [illegible] blood tests remained positive throughout his stay in hospital.

This patient had a [illegible] icteric tinge of the skin and conjunctiva during his last week in [illegible] van den Bergh reaction was negative on three occasions [illegible] was detected in his urine. Liver dullness remained within normal [illegible] throughout the whole illness. The concentration of urea in the blood [illegible] quantity of urine and urea which was excreted daily are given in the [illegible] Fig. 3 gives a graph of the daily volume of urine and of the concentration of urea in the blood. For ten days after admission there was almost complete suppression of urine. For this period the quantity only

urine ceased The blood urea reached [illegible] on of 315 mg per 100 [illegible] May 16 thirteen days [illegible] poisonous fumes Abou [illegible] time the kidneys resumed [illegible] polyuria rapidly developed [illegible] Blood urea took about a fort [illegible] month to During the p [illegible] on of urine the uri [illegible] manual less than 0 [illegible] ru and in contrast to C [illegible] on of urea in the urine [illegible] while the blood urea was [illegible] the excess of urea [illegible] eliminated from the body [illegible] od of suppression the [illegible] of albumin on hosp [illegible] On May 15 there was 0 3 [illegible] 6 in the urine on May [illegible] percent A faint trace of albu [illegible] noted on June 6 The [illegible] remained about 1008 throughout the entire period Bile blood [illegible] casts of leucin and tyrosin crystal [illegible] Even during the period of suppression the urine appeared [illegible] clear and only [illegible] ties and epithelial cells were seen [illegible] microscopic examination The urine was kept alkaline throughout the period of illness On May 31 a urea concentration test gave the following result —

Hour	Per cent urea
0	1 0
1	1 4
[illegible]	1 4
1	1 6

which indicated some [illegible] loss of concentrating power Towards the end of the period of anuria the patient looked sallow and bloated though there was no definite edema The lungs remained free of all adventitious sounds throughout Mentally he remained bright and cheerful but slept well without any hypnotic and, except that his knee reflexes were always active and that he complained of some unfamiliar feelings of numbness in his fingers and toes there were no nervous signs whatever The patient's blood pressure rose slowly, from 110/60 on admission to a maximum of 142/90 on May 18 the fifteenth day after exposure to the poisonous vapors and then dropped rapidly to 115/70 on May 22 and during June became the same as on admission

The pulse rate which was 80 on admission dropped to 50 in three days and remained about this figure until the urinary flow was re-established when it increased to between 80 and 90 until the patient's discharge from hospital After the initial rise, the temperature remained normal throughout The following blood counts were made

	May 13	May 14	June 4	June 9
Red cells [illegible]	4 97	3 94	5 51	5 09
Hemoglobin per cent	88	66	90	85
Thousand white cells	11 1	10 6	5 8	8 4
Per cent polymorphonuclears	64	79	54	[illegible]
Lymphocytes	10	20	38	[illegible]
Large mononuclears	9	0	1	1
Eosinophiles	[illegible]	2	3	0
Basophiles	1	0	1	0

The blood picture therefore showed a secondary anemia which was doubtless wholly caused by the hemorrhage from the gastro-intestinal tract A part of blood was removed by venesection on May 13 but this would not affect the count to the extent shown on May 16 There was no excessive lymphocytosis as exhibited by Case I A lumbar puncture was performed on May 14 the day before the re-establishment of renal function The cerebro-spinal fluid exhibited no increase of pressure 17 c c were withdrawn and found to contain 4 lymphocytes per c mm The globulin content and Lange gold curve were normal the Wassermann reaction was negative (as it also was in the blood) The urea content was 261 mg per 100 c c —practically identical with 263 the blood urea figure on the same date

By [illegible] that he felt perfectly well He was discharged [illegible] and readmitted for examination on July 10 1913 [illegible] tly well and clinical examination revealed [illegible] observations were made

[illegible] cent urea 1018 S G July 11 80 oz [illegible] trace of protein casts, or other abnormal [illegible]

[illegible] RATION TEST

[illegible] ths
1 J
1 C
1 "
1 0

Blood — [illegible] mg urea per 100 c c July 11 30 mg urea per 100 c c Red cells 4 3 6 0 000 per c mm Hæmoglobin 80 per cent white cells 6,200 per c mm P M N 68 per cent lymphocytes 25 per cent large mono's 3 per cent eosinophiles 1 per cent Van [illegible] reaction negative blood pressure, 110/75

Since these results showed that slight anæmia and slight impairment of renal function were still present he was sent on an other month's sick leave to complete his convalescence On return no evidence of any disease was present

Case 3 aged 35 —This subject assisted Case 2 in extinguishing the fire As far as can be judged he had had a larger dose of poisonous vapour than Case 2 and very much more than Case 1 He had no headache nausea vomiting or definite subjective symptoms at any time Close questioning, however, elicited the fact that he had a transitory attack of "giddiness on May 6 three days after the fire He was admitted to hospital for investigation on May 9 and June 7 Physical examination revealed no appreciable abnormality except that of fact

The following laboratory investigations were made

Urine on admission —S G 1012, acid faint trace of albumin no sugar bile blood or casts

	May 10	May 1	May 1[illegible]	May 13	June 8
Blood urea mgm per 100 c c	76	111	°	33	30
Daily amount urine cc	67	164	140	66	46
Urine per cent urea	1 1	0 9	°	1 B	1 3
Albumin		Faint trace			N I

UREA CONCENTRATION TEST—JUNE 10

Hours	Per cent urea
0	3 0
1	2 6
2	1 0
3	3 6

Blood pressure 130 75 on May 12 and June 8 (Pulse rate, 76)

Blood count May 9 Red cells 5 250 000 per c mm hæmoglobin 90 per cent white cells 6 000 per c mm P M N 73 per cent lymphocytes 23 per cent large mono's 5 per cent Van den Bergh reactions were negative on May 9 and June 7

This case showed only a trace of protein during May, combined with rather high blood urea on May 10 and polyuria on May 11 and 13 It is questionable how far the polyuria was due to fright or forced drinking of water with the idea of maintaining the urinary secretion for knowing that Case 2 was expected to die he was naturally anxious about himself The proteinuria slight though it was indicates some damage to the kidneys but by June this had disappeared and the kidneys power to concentrate urea was unimpaired

Case 4, aged 28.—This man was exposed to the fumes [illegible] on May 3. He was admitted to hospital for examination on May 8. During the period of his exposure to the vapour from the extinguishers he felt a little faint and had choking sensations at times. He turned in immediately after the fire. Two hours later while lying in his hammock he felt sick and vomited a brownish fluid followed by bright blood. He vomited a similar fluid twice more during the night. He turned out at 6 a.m. next morning and carried on duty within supporting at the sick bay. He had a severe headache, felt sick and thirsty all day, and could eat nothing. The following day (May 5) he felt well except for a slight headache. On admission to hospital a clinical examination revealed nothing of significance.

The following laboratory tests were done:—

Urine on admission, May 8: S.G. 1013, acid, a faint trace of proteid, no casts or other abnormality.

The urine was measured daily between May 8 and 15; the amount was always between 44 and 77 oz. The urea between 0·8 and 1·8 per cent (twenty-four hour specimens). The urine became free from protein by May 16.

The blood urea was estimated twelve times between May 9 and June 7. On admission it was 63 mg. per 100 c.c. The minimum figure was 42 on May 13, the maximum 67 on June 1. The mean concentration was 56·4 mg. per 100 c.c. The blood and urine were examined a month later on July 9. The urine was still proteid free, but there was 89 mg. urea per 100 c.c. of blood.

Urea Concentration Test, May 31

Hours	Per cent. urea
0	1·3
1	2·3
2	2·7
3	3·0

Blood pressure May 9, 135/80.

Blood count, May 8: Red cells 4,970,000; white cells 7,200; large mononuclears 4 per cent.; haemoglobin 85 per cent.; P.M.N. 48 per cent., eosinophiles 1 per cent.; lymphocytes 47 per cent. Van den Bergh reaction was negative May 9 and June 6.

This case had almost immediate gastric haemorrhage, but was otherwise fit within forty-eight hours. The albuminuria indicates some kidney damage which, however, could not have been grave as shown by the urea concentration test. The volume of urine was always within normal limits, but the mean blood urea figure of 55 is generally considered above normal. It however showed no tendency to drop and since there was no other sign of renal insufficiency the high blood urea would appear to be a personal idiosyncrasy.

Discussion

Symptomatology.—The above cases are worth detailed discussion as similar cases have rarely been described as arising subsequent to using a fire extinguisher. In general all the four cases showed some signs, very slight or very grave, of impaired kidney function. It is remarkable, however, that the urine showed so few changes: there was never much albuminuria in any of the cases, and no casts, bile, or trace of blood were ever present. The contrast between Cases 1 and 2 is of great interest. Case 1, after a latent period of a week's oliguria, developed all the signs of an acute uræmia. Case 2, after ten days almost complete anuria, remained free from all clinical signs of kidney disease except for a trivial rise in blood-pressure.

If the [illegible] graphs are examined it is noteworthy that as one would expect with [illegible] blood urea at its maximum, Case 1 was able to concentrate urinary [illegible] than when the blood urea approached normal. That is to say, as the [illegible] of urea in the blood fell, the percentage of urea in

TABLE [illegible] BLOOD AND URINE CARBONTETRACHLORIDE POISONING

Case [illegible] Poisoned May 8, 1920

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	Daily urine			Blood urea nitrogen mg. per 100 c.c.
						Volume c.c.	Urea gm.	Urea %	
[illegible]	[illegible]	[illegible]	[illegible]	1	2	—	—	—	91
1	—	—	[illegible]	2	2	—	—	—	119
[illegible]	—	[illegible]	[illegible]	3	3	0.9	0.1	[illegible]	165
1	[illegible]	—	[illegible]	4	4	0.2	0.1	[illegible]	189
[illegible]	[illegible]	[illegible]	[illegible]	5	5	0.4	0.1	[illegible]	190
[illegible]	[illegible]	[illegible]	—	6	6	0.5	0.1	[illegible]	201
[illegible]	[illegible]	[illegible]	[illegible]	7	7	2.0	—	—	210
[illegible]	[illegible]	[illegible]	—	10	8	0.2	0.2	[illegible]	201
[illegible]	[illegible]	[illegible]	[illegible]	11	9	0.7	1.1	[illegible]	201
[illegible]	[illegible]	[illegible]	[illegible]	11	10	0.7	1.1	[illegible]	200
[illegible]	[illegible]	[illegible]	[illegible]	11	11	0.7	1.1	[illegible]	202
[illegible]	[illegible]	[illegible]	[illegible]	11	12	0.4	1.1	[illegible]	96
[illegible]	[illegible]	[illegible]	[illegible]	11	13	0.4	0.2	[illegible]	198
[illegible]	[illegible]	[illegible]	[illegible]	11	14	0	0.8	[illegible]	243
[illegible]	[illegible]	[illegible]	[illegible]	1	15	0.5	10.1	[illegible]	235
[illegible]	[illegible]	[illegible]	[illegible]	13	16	0.5	1	[illegible]	—
[illegible]	[illegible]	[illegible]	[illegible]	1	17	1.1	0.1	[illegible]	1.1
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	18	1.7	5.1	[illegible]	11
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	19	1.5	1.5	[illegible]	121
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	20	1.1	3.0	[illegible]	111
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	21	1.1	5.1	[illegible]	71
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	22	1.0	11.0	[illegible]	1
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	23	1.0	3.1	[illegible]	1
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	24	1.7	3.5	[illegible]	65
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	25	1.0	10.0	[illegible]	52
[illegible]	[illegible]	[illegible]	—	[illegible]	26	1.5	1.0	[illegible]	13
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	27	1.1	3.0	[illegible]	41
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	—	—	—	—
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0.5	—	—	31
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1	—	—	1
[illegible]	[illegible]	[illegible]	[illegible]	31	[illegible]	—	—	—	—
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]				
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]				
—	—	—	—	[illegible]	3	1.0	22.8	[illegible]	91
—	—	—	—	[illegible]	40	1.0	24.8	[illegible]	30
45	[illegible]	[illegible]	[illegible]	[illegible]	—	—	—	—	—
89	[illegible]	[illegible]	[illegible]	[illegible]	—	—	—	—	—

the urine fell [illegible] [illegible] 2 however, the opposite phenomenon was noted: the [illegible] in the urine increased as the amount of urea in the blood [illegible] indicating that the kidney function was improving first [illegible] urea was falling. In Case 1 the kidneys

power of concentrating urea appears to have been less damaged in spite of his more severe clinical symptoms, because the blood urea returned to normal in less time, and his concentration test, after a month's sick leave, was better than that of Case 2. Moreover, when the "head" of blood urea was about 300 in both cases, the urine urea was about 2 per cent. in Case 1, as against 0·7 in Case 2. Case 1, however, at first did not recover function as quickly as Case 2 because as the blood urea dropped to normal the percentage of urinary urea fell below that of Case 2. Case 1's behaviour is like that usually seen in recovery from ordinary calculus anuria in the subject of permanent renal insufficiency, where the percentage of urinary urea varies directly with the 'head' of blood-urea. A graph by G. T. Cook [1] is a good recent illustration of this phenomenon. In Cook's case, as the blood-urea fell from 350 to 50 mg. per 100 c.c., the percentage of urea in the urine dropped from 1·3 to 0·4. In Case 1 the corresponding drop was from about 2 to 0·8, but in Case 2 there was a rise from 0·7 to over 1 per cent., as the blood urea declined from 300 to 50 mg. per 100 c.c.

To summarize: it is noteworthy that all the four patients had some signs of kidney dysfunction that three of them had hæmatemesis and signs of gastric irritation. In Case 1 this was the only subjective symptom. In Case 2 the gastric symptoms and 'black vomit' were more persistent than in the others and he also had considerable melæna and secondary anæmia. Case 1 was the only one with definite jaundice because in Case 2 the alleged early jaundice was doubtful and the van den Bergh reaction was always negative.

Idiosyncrasy.—The phenomenon of personal idiosyncrasy to poisons was most striking in these four men. Case 3 states that he got more of the poisonous vapour and was longer in the burning chart house than Case 2 because he emptied two cylinders of carbon tetrachloride before Case 2 arrived. Yet Case 3 had no symptoms and Case 2 all but died as did Case 1, who can only have had a fraction of the dose inhaled by Cases 2 and 3 (being exposed for less than five minutes to the vapour from half a cylinder, as against an exposure of about ten and fifteen minutes to gas from 2 and 4 cylinders respectively). Finally, Case 4, who was affected more than Case 3 but less than Case 1, probably got less vapour than Case 3 but more than Case 1.

Diagnosis.—Cases whose initial symptoms are pyrexia, general malaise and signs of stomach irritation are likely to be confused with gastritis or gastric influenza. Influenza was the tentative diagnosis with which Case 2 arrived in hospital.

If there is, in addition, a definite history of hæmatemesis, pyloric ulcer may be considered as the most probable diagnosis, as in Case 1. When jaundice is evident the disorder might easily be mistaken for catarrhal jaundice. When subsequently grave renal symptoms supervene, the patient becomes an anomalous type of acute nephritis, which was the official diagnosis of Case 1 at the time when Case 2 arrived in hospital.

However when the complete history and progress of these cases were known, it became clear that they must have been poisoned by something in the fumes from the fires, or the fluid used to extinguish them Carbon tetrachloride was alleged to be the sole constituent of this fluid At first one hesitated to attribute the symptoms of these cases to carbon tetrachloride, because from what is known of its action and that of its close chemical allies chloroform ($CHCl_3$) and ethane tetrachloride ($C_2H_2Cl_4$) signs of liver damage and jaundice predominate over signs of renal dysfunction Nevertheless, kidney lesions are always present to some extent in the type of toxic jaundice due to poisoning by the organic halogen compounds Moreover, if we combine the four cases, we find among them slow pulse, jaundice, abdominal pain, hæmorrhage from the stomach and bowel and suppression of urine—symptoms which are all characteristic of toxic jaundice as caused by the organic halogens or by the yellow fever virus It would appear, therefore, that carbon tetrachloride poisoning was the cause of these accidents It has been suggested that fumes from the burning paint overcoats wood or felt, rather than the extinguishing fluid may have been the responsible toxic agent But this hypothesis appears improbable when one considers the numbers of people who must have been exposed to such products of combustion without anyone having described such distinctive signs of kidney damage as a sequela to smoke fume poisoning In this connection the paper on "Gases from the Thermal Decomposition of Common Combustible Materials," by Olsen, Ferguson and Schaffan [2] is significant. A careful and exhaustive series of investigations showed that smoke fumes could contain poisonous quantities of carbon dioxide, carbon monoxide, hydrocyanic acid, hydrogen sulphide, sulphur dioxide, ammonia, and nitrous fumes These gases are all either immediate pulmonary irritants or asphyxiants Apparently no gases which are capable of a delayed toxic action on the liver or kidneys similar to that produced by chloroform and carbon tetrachloride were discovered in smoke Metallic poisoning, resulting from the fused electric leads in the destroyer's chart house, has been put forward as a possibility This speculation is rendered untenable as regards Case 1, since no electric wires were damaged in his ship

The suggestion that the poison was not carbon tetrachloride itself but some product of its interaction with the burning bulkheads is more difficult to ignore Of course if carbon tetrachloride can be oxidized to phosgene ($COCl_2$), under the conditions in question a most poisonous vapour would result Phosgene, however has an almost immediate and violent irritant effect on the lungs, and little or none on the kidneys None of the cases had any pulmonary symptoms until Case 1 about fourteen days after exposure developed a pulmonary œdema which was definitely uræmic and not due to a gaseous lung irritant

Treatment.—Cases 3 and 4 required no treatment Case 1 was treated on usual lines for hepatic and renal poisoning He was given alkaline

[illegible] small feeds of [illegible] glucose [illegible] He was fairly [illegible] bicarbonate to and [illegible] with [illegible] given a diuretic mixture to drink, but had no intravenous or subcutaneous diuretics

Case 2 had the same treatment but, in addition, owing to his early persistent vomiting, he was given strong and weak glucose and salt solutions intravenously He also had a pint of blood removed on May 12 and a lumbar puncture done on May 14 The following diuretics were administered subcutaneously, sodium caffeine salicylate, "Spartine," and 'Digalen"

It is impossible, of course, to say what value or effect, if any, the treatment had on the progress of their illnesses But Case 1 had practically no diuretics, while Case 2 had many In both cases the kidneys resumed their function of preventing urea accumulating in the blood at the time the concentration of urea was about 300 mg per 100 c c If as is sometimes stated, urea is the most efficient diuretic, it is unlikely that therapeutic doses of other diuretics can be expected to have any effect when the blood contains five to ten times the normal amount of urea As urea is alleged to be innocuous (being only the index of an unknown toxic substance which accumulates in the blood at the same time), one wonders that if one had had the courage to inject at once into the circulation enough urea to have raised the concentration above 300 mg per 100 c c , whether effective kidney function could have been stimulated any earlier and if thereby it would have been possible to have warded off Case 1 's attack of acute uræmia

The Significance of these Naval Accidents —These subjects of grave renal disorder caused by poisoning with carbon tetrachloride vapour are of great interest to the general public, because all over the world this substance is used in small portable fire extinguishers which are often employed in small enclosed spaces It is highly improbable that only two individuals among those who happened to use these extinguishers should because of some rare idiosyncrasy get their kidneys damaged, and it becomes almost inconceivable that these subjects, if really unique should have turned up at the same place within a month of each other The conditions in putting out a fire with carbon tetrachloride in a ship s office or chart house cannot be very different from those obtaining in many small ill-ventilated spaces ashore Moreover, though Case 2 probably got a larger dose of vapour than would be general, Case 1 probably got less Therefore, one is forced to the conclusion that similar cases of poisoning may have arisen elsewhere but have been missed or never reported This conclusion is not as unlikely as might appear when the events at Chatham are honestly faced If it had not been known that carbon tetrachloride was the probable constituent of the fire extinguishers and was one of the organic halogen compounds—facts unknown to most medical practitioners—the origin of Case 3 would have remained a mystery If Case 2 had not been sent to hospital before Case 1 left the fact that the latter had also breathed fire

extinguisher fumes would never have been [illegible] remained on record as an anomalous type [illegible] explains. Although by force of circumstance I had had considerable experience of gas poisoning and was acquainted with Sir William Willcox's [3] work on toxic jaundice, yet I and my colleagues at Chatham completely missed the significance of Case 1's illness, and I do not believe that the majority of medical practitioners would have done any better. The delay in the appearance of grave toxic symptoms combined with the fact that the early symptoms mimic everyday diseases would be sufficient to put most doctors off the scent. Even should the medical man hear that his patient had put out a fire a day or two prior to falling ill it is improbable that he would associate the fire with the illness. Moreover poisoning is often the last thing to be thought of by a medical practitioner. That large numbers of poisoning cases do often escape notice is not without precedent. For example it was years before "Devonshire colic" was recognized as a common form of lead poisoning. Moreover it is common knowledge that any subject who is brought out unconscious from an enclosed space or fire is liable to be diagnosed as carbon monoxide gas poisoning whatever the real cause. In the Royal Navy the peculiar series of cases of chronic arseniuretted hydrogen poisoning [4] which occurred in submarines during the war would have been totally missed by me but for a lucky sequence of accidents. They also were at first attributed to carbon monoxide. Such arguments make it not improbable that there may be and have been many cases of carbon tetrachloride vapour poisoning which masquerade in sick records under such entries as influenza, gastritis, jaundice and nephritis.

Exposure of Men to Carbon Tetrachloride Vapour without Toxic Symptoms

In December, 1933, at 6·45 a.m. a third fire broke out in a large well ventilated workshop in an electrical plant. The apparatus was enclosed in a steel box about 3 ft. high. About thirty cylinders of carbon tetrachloride were sprayed on the burning electrical installation through apertures in this box. It took some thirty minutes to put out the fire. Eight dockyard employees and six policemen were exposed to the fumes for periods varying from five to twenty minutes. The opportunity was seized to examine these men. Beyond one or two of the subjects complaining of slight temporary nausea and headache, there were no signs of acute poisoning except in the case of one man who had probably the longest and most intense exposure to the vapour, because he remained close to the steel box directing operations during the whole period. This man was seized with acute pain in the abdomen and vomited twice before he was admitted to hospital at 10·30 a.m. on the same day as the fire. He noticed no blood in the vomit. On admission he felt very sick, but did not vomit again; there was diffuse epigastric tenderness. The temperature was 99·6° F. the pulse-rate 84. The next morning he felt practically well. The blood urea

was [illegible] protein in the urine which was otherwise normal On examination a week later there were no signs of poisoning The blood urea was then 32 mg per 100 c c and the albuminuria had disappeared Van den Bergh's reaction was negative This man was probably a mild case of carbon tetrachloride poisoning though he himself attributed his condition to the heavy sickly fumes which arose from the burning insulation on the electric cables It is worth emphasizing that some slight pyrexia was present in this case as it was in the earlier cases of gastric disturbance because it is this early febrile reaction which encourages the false diagnosis of gastric influenza in such cases

The other thirteen men had their urine and blood examined the day after the fire and again a week later Only one man had any proteinuria, but he had long standing aortic disease and arteriosclerosis which was sufficient to account for it moreover, he had been in the workshop for only five minutes during the release of carbon tetrachloride His blood urea was 36 mg per 100 c c

Taking the blood urea of the total fourteen men together, the maximum titre which was recorded the day after exposure was 48, the minimum 21 with a mean of 31 2 mg per 100 c c of blood A week later the corresponding figures were 38 24 and 29 5 In these subjects there was really no evidence that carbon tetrachloride had caused any kidney dysfunction whatever It would appear therefore that the liberation of a large amount of carbon tetrachloride is not generally dangerous in a large workshop or open spaces as contrasted with small enclosed ones On the other hand there is one other difference between this and the earlier fires in the ship fires the vapour was liberated shoulder or head high (in fact, Case 1 thinks some carbon tetrachloride splashed back on his face), whereas in the dock-yard fire the vapour would have been liberated at little more than 3 ft from the ground—a point of some significance, considering the great density of this vapour

In the case of chloroform the concentration of the vapour inhaled, rather than the amount of gas or time of exposure, is probably the more important factor in causing toxic symptoms One would therefore expect the same rule to apply to carbon tetrachloride, another anæsthetic closely allied chemically

A Note on the Literature of Poisoning by Carbon Tetrachloride Vapour

Recently Müller [5] has published a comprehensive review of the toxicology of carbon tetrachloride poisoning in which he examined forty-three reports and papers on the subject They chiefly refer however to accidents following use of carbon tetrachloride as a shampoo and anthelmintic One gathers from this report that late action on the kidney is uncommon, though one or two cases with oliguria and high blood-pressure

are noted, no such sequelæ are mentioned as having followed the use of carbon tetrachloride in a fire extinguisher. Some animal experiments are also quoted which show that when administered as a liquid by the mouth carbon tetrachloride has a selective action on the liver and kidneys.

Some further cases of poisoning by carbon tetrachloride vapour *not* due to the use of fire extinguishers are reviewed in a recent number of the *Journal of Industrial Hygiene* [6]. According to the abstractor —

(1) Seven Italians who were exposed to carbon tetrachloride vapour while cleaning felt hats, got headache, nausea, vomiting, smarting eyes and mouth, jaundice, enlargement of the liver, and definite signs of kidney irritation. Acute nephritis and bronchopneumonia developed in one of this series. It is alleged in this abstract that calcium deficiency and addiction to alcohol predispose to carbon tetrachloride poisoning.

(2) In another accident three men were exposed to carbon tetrachloride vapour. One had trivial symptoms only, but the other two, eight days after an attack of acute gastro-intestinal disturbance, developed 'oliguria, moderate hypertension, and generalized œdema.' One of the men died, the other, after his blood urea had risen to 375 mg. per 100 c.c. got well within a month.

(3) Finally, mention is made of another accident followed by a single case having identical symptoms to the above who recovered after the blood urea figure had reached 480. In none of the last three cases was there any reference to jaundice or to the liver, they are therefore almost the exact counterpart of Case 2 at Chatham. In these cases there can be no question of poisoning by the products of combustion or by products of the thermal decomposition of carbon tetrachloride. Therefore, their clinical identity with the Chatham casualties leaves no reason for doubt that the vapour caused the toxic nephritis. The references below refer to accidents in which, like those at Chatham, the carbon tetrachloride vapour would have been contaminated by smoke and possibly traces of chlorine, hydrochloric acid and phosgene produced by the action of heat on carbon tetrachloride. These references can be more profitably examined now that the results of exposure to carbon tetrachloride vapour, uncontaminated by smoke are known.

In the first place, the only well documented account of a toxic nephritis following the use of carbon tetrachloride in a fire extinguisher which I know of, was found in Paris and was reported in December, 1933, by Gautier Chatron and Seidmann [7]. This patient exhibited early abdominal pain, hæmatemesis, melæna, anuria and prostration. There is no mention of jaundice. He was admitted to hospital on the tenth day after exposure to carbon tetrachloride. His blood urea was then 300 mg. per 100 c.c., blood pressure 220/120, and the urine contained protein and casts, but the urinary flow had been re-established, as over 2,000 c.c. of urine were found next day, though he is stated to have had oliguria before his admission to hospital. The case is almost an exact replica of the Chatham Case 2. In

Paris, as it [illegible] the authors express sur[illegible], ill should have made so rapid and complete a recovery. I [illegible] corroboration of the Chatham conclusions, and as so frequently happens with any type of suspected gas poisoning, until he came under the care of the above authors, the Paris patient was diagnosed as having carbon monoxide poisoning. Moreover as Case 3 at Chatham thought happened to him, the Paris case states that in liberating the carbon tetrachloride to put out a fire in a deep, ill ventilated cellar some of the liquid carbon tetrachloride splashed back on to his face which is consistent with the suspicion that these cases of toxic nephritis are likely to occur only if the liquid is sprayed shoulder high against an adjacent wall or bulkhead.

Alice Hamilton [8], in a paper on "The Formation of Phosgene in the Thermal Decomposition of Carbon Tetrachloride," in which she first reviews the literature on this subject, states that the first accident which was ascribed to carbon tetrachloride in a fire extinguisher took place at the Portsmouth (U.S.A.) Navy Yard in 1920. The two victims were working in a confined space in a submarine; they became unconscious and were extracted with difficulty. "Both recovered from the anæsthetic effects, and were also recovering from the burns they had sustained, when pneumonia set in and they died, one five and one nine days after the accident." No other symptomatology is given. Hamilton ascribed these fatalities to phosgene, without giving very adequate reasons for doing so, but she admits other authorities disagreed with the diagnosis of phosgene poisoning. It might be that the illness these men died of was analogous to an ordinary post-anæsthetic pneumonia, as they are stated to have been anæsthetized by the carbon tetrachloride. On the other hand it is possible that these accidents had nothing to do with the extinguisher fluid.

This paper also summarizes the laboratory work which proves that when heated with moist air in the presence of a catalyst carbon tetrachloride will produce chlorine, hydrochloric acid and phosgene.

In Germany some casualties have been ascribed to the use of carbon tetrachloride extinguishers in fires. In one accident six firemen became unconscious, and on recovery suffered from "irritation of the upper air passages and inflamed eyes." The Germans attributed this irritation to chlorine and hydrochloric acid rather than to phosgene.

From France also several examples of carbon tetrachloride extinguisher poisoning have been reported. Only two case histories are known, in these the chief symptoms were nausea, gastric disturbance, jaundice and prostration, which suggest poisoning by carbon tetrachloride rather than phosgene. Hamilton comments on the scantiness of information concerning fire extinguisher accidents, but concludes that "negative evidence as to the occurrence of occupational poisoning is of little value in this country (U.S.A.)—suggesting, as I have done, that the absence may be more apparent than real."

Olsen [9], however criticizes the above paper on behalf of the Chemical

Fire Extinguisher Association. He states 5,770,000 extinguishers and 7,000,000 refills of carbon tetrachloride have been sold by [illegible] between 1910 and 1930 [illegible] that "No one of our companies has ever received any evidence whatever of a single fatality due to the use of an extinguisher of the carbon tetrachloride type" (No mention is made of non-fatal accidents—the Chatham cases did not die.) He favours the view that any accidents attributed to phosgene are due to the ordinary toxic products of combustion or smoke and not to carbon tetrachloride or to its thermal decomposition. He gives the conclusions of two independent investigations on carbon tetrachloride extinguisher poisoning which are useful, and being generally inaccessible to English readers, are given here verbatim.

He first quotes H. H. Nuckoll (*Quart. Nat. Fire Protect. Ass.*, 1921, xiv, 221), who says: "In thousands of tests in extinguishing fires with carbon tetrachloride no apparent injury to the health of the members of the staff of Underwriters' Laboratories has been experienced, although the irritating fumes caused lachrymation and in some cases *resulted in a subnormal feeling lasting for several days*." These tests were run under varying conditions covering a period of twelve years and included the use of small rooms partly ventilated with repeated exposure in some cases for hours at a time. The other quotation is from the 1921 report of the Bureau of Mines (U.S.A.): "It is not the intention of this paper to discourage the use of carbon tetrachloride fire extinguishers, because in most cases, ventilation or the large amount of air present prevents the formation of dangerous concentrations of gas. Also the operator can nearly always escape easily and quickly from the vicinity of the gas *when he knows he should do so*. Rather the purpose is to show the danger of using such extinguishers in *small unventilated spaces* where escape is impossible." (*My italics.*)

The perusal of these papers confirms the supposition that:—

(1) The Chatham cases are unique in being the only carbon tetrachloride extinguisher casualties to have been fully investigated. (The Paris case was not investigated until ten days after exposure.)

(2) It would appear that phosgene, hydrochloric acid and chlorine are produced when carbon tetrachloride is heated in the presence of a catalyst, and may be responsible for immediate irritative symptoms; but, under ordinary circumstances, they make the atmosphere so unpleasant that anyone exposed will remove himself from the presence of these decomposition products before they could produce any serious damage.

(3) In the light of the Chatham experience and of the little that is known about other fire extinguisher casualties, it would seem that with the exception of anæsthesia the dangerous symptoms are delayed some hours or days and are caused by carbon tetrachloride itself. It would appear

[1] I have been privately informed by a representative of this firm that these figures can now be doubled.

also, from the literature, that too much attention has been focussed on the possibility of poisoning by the decomposition products rather than on the unaltered compound itself

(4) It must be admitted that the experience of the Staff of Underwriters Laboratories would make it appear that carbon tetrachloride poisoning must be very rare but here one should remember that the putting out of fires by unperturbed experts, working under controlled experimental conditions is a different matter to that of an excited tyro trying to extinguish an unexpected fire in a small, ill-ventilated space or between decks in a ship From what was seen at Chatham, the underlined reference to *subnormal feeling* may be significant of impaired kidney function Moreover any worker especially sensitive to carbon tetrachloride would probably soon show it, then be removed from its influence and again we have no idea how far tolerance to this drug may be acquired by frequent exposure to small doses

(5) The evidence as a whole indicates that like other organic halogen poisons, carbon tetrachloride is a hepatic and renal poison but unlike chloroform and tetrachlorethane carbon tetrachloride as vapour has a more selective action on the kidneys than on the liver

(6) I do not think these papers call for any modification of the conclusions reached from the Chatham experience, most of which they confirm but they point to one more practical lesson if a man becomes unconscious at a fire when carbon tetrachloride has been used, he must be promptly treated as a potential case of renal hepatic and possibly calcium insufficiency

(7) Finally it is hoped that after reading this paper, nobody will be so devoid of a sense of proportion as to imagine these Chatham accidents are any argument against the use of carbon tetrachloride as a fire extinguisher One must remember that the prompt use of this liquid has saved a multitude of people from death by burning, or asphyxiation by the poisonous gases which are normally present in smoke fumes, while on the other hand it appears that cases of carbon tetrachloride vapour poisoning, even as rare and alarming as those at Chatham usually make a perfect recovery

Outside its academic interest, this paper was written merely as a warning to medical men to be on the lookout for such easily missed cases There is no intention to discourage the use of such a valuable weapon against fire as carbon tetrachloride

Summary

A description is given of two exposures in confined spaces to fumes of carbon tetrachloride sprayed from fire extinguishers, and of one exposure in a large well ventilated workshop

Four men were admitted to the first two [illegible] under observation in hospital and the findings [illegible]

These men all recovered but one suffered from oliguria and jaundice and ten days after exposure developed uræmic convulsions He was practically moribund before he unexpectedly rallied Another one had almost complete anuria for ten days but no jaundice and no other symptoms of uræmia

These four men all had some impairment of kidney function three had hæmaturia or gastritis

None of the fourteen men who were exposed in the large workshop developed any untoward symptoms or showed any impairment of kidney function

Personal idiosyncrasy was striking, since there was no association between the amount of exposure and severity of symptoms

The reason for the apparent rarity of such cases is discussed, and it is emphasized that carbon tetrachloride must have saved many lives from death by burning at a very small expense in temporary poisoning

Reasons are given for ascribing the poisoning to carbon tetrachloride and not to its decomposition products

Some literature dealing with poisoning by carbon tetrachloride vapour is discussed

In addition to Sir William Willcox my acknowledgments are due to my colleagues Surgeon Commander J L Preston F R C P J P Shorten and J R Brennan for their valuable assistance The last mentioned officer was responsible for all the laboratory investigations

BIBLIOGRAPHY

[1] Choh T A Case of Calculous Anuria *Lancet* 1933 i 1121

[2] Hayes J C Ferguson G F and Schreiber L Gases from Thermal Decomposition of Common Combustible Material *Indus and Engin Chem* 1933 xxv 540

[3] Willcox W N Toxic Jaundice The Lumleian Lectures *Lancet* 1921 ii 1057 1111

[4] Hervey S F Toxemic Anuria from Vaporized Hydrogen Gas in Submarines *The Journal of Industrial Hygiene* 1919 20 1 215

[5] Morris R O Carbon Tetrachloride Poisoning *Ibid* 1933 xv 418

[6] Mayer L W Carbon Tetrachloride Poisoning *Journ Amer Med Assoc* 1933 xcix 955 (Abstracted in *The Journal of Industrial Hygiene* 1933 xv 384)

[7] Haldane C Chambers M and Seligmann I Hydrocyanic Poisoning by Carbon Tetrachloride Vapour Its Recognition and Treatment by Intravenous Injection of Sodium Thiosulphate Gas Casualties *Bull of Med Services Ind Hyg dept Home Office* 1933 i 1634

[8] Hamilton A Formation of Phosgene in Thermal Decomposition of Carbon Tetrachloride *Indus and Engin Chem* 1933 xxv 539

[9] Hayes J C Discussion of Dr Hamilton's Paper *ib* ii

NERVOUS BREAKDOWN

[illegible]

[illegible]

THE term "nervous breakdown" is not a bad one in the sense in which it is generally used—that is, to cover an illness, or episode of disease which is mental rather than bodily. Physiologically speaking and assuming that the brain is the organ of mind we may regard such disease as representing disorder or breakdown at the highest level of nervous function.

Our first step in the classification of nervous breakdown is to distinguish between those disorders of function which can be correlated with a known physical cause (such as cerebral tumour or toxic delirium) and those for which (at present) no physical correlate can be found. This last kind of disorder is commonly spoken of as functional in contrast with that in which an organic basis can be demonstrated. It is of the functional nervous breakdown that I wish to speak to-day and especially of a variety which truly represents an episode in the life of the patient standing out against a background of average health.

SYMPTOMS

Among the varied symptoms of this illness the most constant is a disturbance of mood or feeling. It is not always, however the most obvious symptom being often imperfectly realized or inadequately described by the patient.

The symptoms may take various forms, of which the commonest is a morbid feeling of *depression*—morbid because out of proportion to the facts of the patient's life. The sufferer will say, "I feel so depressed I don't know what to do—and there is no reason for it. I have a good husband a good home, there is nothing really to worry me." Or it may be referred to particular but inadequate causes. With it are often associated ideas of remorse or self-reproach.

With the depression there is often a morbid feeling of *fear*—which again, may be free or attached. The patient may say "I have a dreadful feeling of foreboding, as if something awful is going to happen"—or he may have an exaggerated feeling of fear in relation to ordinary difficulties or particular situations. Both depression and fear may be attached to the other symptoms of the illness which will be described so that the patient feels he must have cancer or syphilis, or is afraid that his brain is giving way, or that he will drop dead with heart disease. With these positive feelings there is a negative complaint—absence of the normal feeling of happiness in relation to work, play and people and of pleasure in food, drink or tobacco. Loss of sexual feeling is a frequent symptom.

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In the intellectual sphere the common complaints are of slowness difficulty in concentration, indecision, and a sense of mental fatigue with these there is often a sense of unreality— as if I am living in a dream The patient is self-absorbed and often recognizes and complains of his inability to think of anything except himself Bodily symptoms are as a rule present in great variety, and may cloak the true nature of the illness Most constant, perhaps is a sense of being easily fatigued, often associated with pains in the back and limbs Headache is common—described, usually, in terms of continuous discomfort, pressure or numbness Flatulent dyspepsia, constipation, a furred tongue and palpitation are other common symptoms Sleep is, as a rule, disturbed The kind of insomnia varies with the mood If fear is in the ascendant, the patient has difficulty in getting off to sleep and wakes often the depressed patient, as a rule, gets off to sleep easily, but wakes early in a state of great depression and restlessness

There is often a fluctuation of the symptoms in the course of the day As a rule, the morbid feelings are at their worst in the morning Towards the evening the patient may feel almost himself

These are the bare outlines of the illness It is subject to many variations, which depend mainly, upon two factors first the degree of depth of the morbid feeling, second, the personality and character of the individual These two factors are to some extent interdependent If the morbid feeling is of extreme degree the patient's whole self is overwhelmed by it He has no other mind Thus, with depression, there is conviction of ruin or guilt, certainty of cancer or syphilis and these and other ideas may be elaborated in various directions The mind, overwhelmed with fear, is filled with ideas such as that 'the police are coming to take me away, "my children are going to be killed Or when as sometimes happens the negative symptoms predominate, the patient is totally apathetic and indifferent to his surroundings Patients suffering from this degree of the illness constitute a social as well as a medical problem They have to be cared for with many nurses or committed, under certificate of insanity, to an institution But if the degree of morbid feeling is less, if the patient's mind is not completely saturated with the illness, we see him in terms of that which remains of his normal mind reacting to the disease, making the best—or worst—of it, as he is able One man will accept it as something to be endured, another will throw up the sponge easily, others may be resentful, querulous or cowed according to their disposition and training

So far we have been looking at the illness as it were in cross section The longitudinal view shows it as a rule to have a gradual or subacute onset, a subsequent development by degrees to its maximum, a prolonged course, and a gradual recovery Its duration is usually to be measured in months rather than weeks, though there are exceptions It may last several years, yet end in complete recovery and, on the other hand, attacks may occur lasting only a week or two Taking a longer perspective still,

[illegible] marked liability [illegible] in this kind— [illegible] In many instances the attack may be preceded or followed by [illegible] over-action and exaltation which is in itself pathological or [illegible] this kind may occur without relation to one of anxiety or depression

Background

When the facts are carefully ascertained, the most significant feature in the background of the illness is a history of similar illness in other members of the family. This is frequently concealed—deliberately or from ignorance. A severe degree of the illness may be represented by a story of suicide for which some supposedly adequate cause is given. Milder attacks may be hidden behind such labels as anæmia, tired heart, threatened tubercle, intestinal stasis, focal sepsis, retroverted uterus and a host of others. When full information is available a positive family history is obtainable in some 75 per cent. of cases. On the whole the degree of the illness tends to be the same in affected members of one family. The mental type of the individual affected may be of several kinds. Between the attacks he is commonly found to be of a worrying, timid and pessimistic disposition, on the other hand he may be a jovial dominant and rather overactive person—'the life and soul of the party'—or he may alternate between the one extreme and the other—'either down in the depths or up in the clouds', or again, he may be of a "normal" disposition. In his family there will be found, besides normal individuals, persons of the three other types who nevertheless, never have an actual breakdown. A first attack of the illness rarely occurs before puberty. After this it may occur at any age. It is especially common in women about the menopause and in either sex at this the involutional period of life the illness may last indefinitely without recovery.

Etiology

The family history supplies the main factor in etiology. There is a constitutional liability to the illness. Individual attacks may be precipitated by emotional stress, excessive fatigue (mental or physical), insomnia (e.g. from pain) or intoxication (e.g. bacterial—influenza, chemical—alcohol). But in 90 per cent. of cases no physical cause is to be discovered by the physician nor any emotional cause by the patient.

Some of you may think that I am talking of insane people and neurotic people as if they were suffering from the same illness. Where, you may ask, is that fundamental distinction between psycho-neurosis and psychosis? My answer is that the distinction between a psychoneurotic and a psychotic form of this illness is *not* to my mind fundamental. It is quite an arbitrary distinction which is of some practical value from the social and medico-legal point of view but that is all. There is certainly a difference between the man who in his depression thinks without reason

[illegible] that he has it But [illegible] difference of degree too [illegible] might be killed in an accident [illegible] like to take his life but is restrained by thought for [illegible] the man who actually does take his life It is a very important difference practically, but of no importance scientifically—that is in relation to the nature and causation of the illness we are discussing. It is the fashion nowadays to call the mild cases of this illness by such terms as 'psychoneurotic depression' or "anxiety neurosis, and at some point or another to draw a line separating these from the severe cases, which are called psychotic manic depressive or melancholic The distinction is usually held to imply that the two groups are of different nature and causation I believe this to be wrong

Treatment

(1) *Radical* —There is no short cut to cure in this disease This statement I think, would be generally admitted as true of the several degrees of the illness Concerning its applicability to the milder cases there would be less unanimity That there have always been claimants for the ability to cure this illness is perhaps, not surprising The first step is a scientific or pseudo scientific hypothesis Weir Mitchell, for instance, assumed that the cause of the illness was exhaustion and undernutrition of the nervous system The next step is an appropriate plan of treatment The Weir Mitchell treatment comprised rest in bed, isolation, and a superabundance of milk Next comes the result—the patient gets well The difficulty of assessing the value of any such theory or form of treatment arises from the fact that these patients almost always do get well The results obtained should be critically compared with those observed in patients treated by some other method or not treated at all

After Weir Mitchell the exponents of intestinal stasis and then of focal sepsis have had their day (not to mention endocrinologists and osteopaths) But a new impetus and direction of treatment came with the work of Freud and his disciples These patients they argued deny an adequate cause for their depression or anxiety, and they are presumably honest *but* their mental disease has its causes which really do exist in the unconscious mind If, by means of a special method of psychological analysis you explore the depths of the unconscious you will discover repressed emotional longings and conflicts which are at the root of the trouble By doing so you will enable the patient to bring his conflicts into consciousness make a more satisfactory emotional adjustment, and recover Here was a theory which promised well It has been applied long enough for some appraisement to be made Speaking as one who welcomed the theory and worked hard at it I believe that it has failed, and that although the brilliant and laborious work of Freud has been of help in the interpretation of symptoms it has proved of any value in advancing our knowledge of the cause of this

[illegible] analytic [illegible] by their [illegible] It is true that persevering and energetic [illegible] will [illegible] skeleton in the patient's mental cupboard, but I believe this to be equally true of all persons, whether suffering from the illness or not. On the whole I think that analytical treatment has done more harm than good, in that it has inflicted a good deal of unnecessary mental discomfort upon patients already miserable with their illness.

(4) *Symptomatic.*—If we assume that there is no short cut to cure in this illness, our objects will be to ensure that recovery occurs in the least possible time, with the least possible loss of efficiency and with a minimum of suffering. Much might be said upon this subject. I shall attempt only a summary, omitting reference to the degree of the illness which requires nursing or institutional care.

Let me emphasize to begin with that there is one fatal complication which should never be forgotten and that is suicide. There is never any harm in discussing this subject with the patient. It is the strong, silent type of person who is most likely to take his life and the least likely to talk about it. But it is not by any means true to say that the patient who talks of taking his life never does so.

The first principle in the treatment of a nervous breakdown of this kind is to tell the patient that he is suffering from a genuine illness of a kind that is not less real to the physician than an attack of typhoid fever. Anxiety and depression, loss of mental and physical vigour, insomnia, headache and anorexia are as much symptoms of the illness as cough is a symptom of bronchitis. It is an illness that may attack the godly as well as the sinner, the strong as well as the weak. It has nothing to do with insanity. It will get well. The illness must be given a name—'neurasthenia' is not a bad title, but has been much abused. 'Nervous depression' is an alternative. 'Nervous breakdown' is non committal, and often softens.

The next step is to assess the degree of the illness and the resources of the patient. For a mild attack, seen in the earliest stage, a complete and restful change for a week or ten days, with adequate hypnotics, is worth trying. No promises should be given of its success. If it fails one should get the patient to continue with the normal rhythm and routine of his life as far as possible. In the case of a man, keep him at his work if you can, watching his ability to carry the load, and lightening it for him whenever necessary. The best guide, here, is the feeling of the patient, but in order to gauge this aright one must have, or acquire, an intimate knowledge of his personality. One man complains easily, another may go on to the point of suicidal despair without saying much about it. The former needs to be pushed, the latter spared. Sleep is another important guide. Increasing insomnia is an indication for lightening the burden. The ways

of lightening it are many A half day off in the middle of the week may sometimes be obtained A warm bath at the end of the day's work followed by an hour's rest on the bed is useful The best manner of spending the week-ends will vary a good deal with individual patients Those who complain of physical fatigue should spend a proportion of the time in bed and avoid strenuous exercise. There are others in whom the incapacity for physical effort is less, who may be encouraged to spend their time at whatever hobby or sport is likely to give them a sense of achievement The question of social engagements and responsibilities is a difficult one Many patients who are mildly depressed are able to forget themselves in the right company but have a sense of strain and self-consciousness in the presence of others, especially those whose attitude they think will be critical

The patient should be encouraged to talk to his doctor of any worries or troubles with which he is preoccupied and to accept advice and help in the management of current problems, but no analytic treatment should be pursued of a kind which will make him feel at fault or responsible for his illness Some near relative husband, wife, parent or friend should be interviewed, informed of the nature of the illness and enlisted as an ally These patients need and deserve understanding and sympathy, though they may often need encouragement and persuasion as well

The problem of psycho therapy is how to help the patient utilize all that is best and available of personality and character in the effort to endure and combat the illness Faith of some kind or another in something outside himself is the greatest asset Religious faith, faith in the doctor, faith in himself, faith in the particular treatment he is having—all have their value Nearly all these patients are better for some kind of physical treatment be it medicine, heliotherapy or massage, provided this treatment is regarded by the patient as a means to the desired end and not as an immediate cure Changes in the form of physical treatment are obviously necessary from time to time I believe that, though it may not be the exact truth the assurance from the doctor, "I will get you well, is of greater value to the patient than the simple statement, 'You will get well

The treatment of insomnia is usually important These patients need sleep and must have a certain minimum I will not enter the field of the battle of the barbiturates here, but am content to say that in my experience they are the most valuable medicines at our disposal for the treatment of insomnia in this kind of illness Medinal is, I think, the most useful, and a dose of 5 or 7½ gr nightly may enable a patient to continue at work throughout a long illness of this kind without coming to any harm I have rarely seen a case in which, when the illness was over, the patient needed or desired to continue with the drug The doctor of course, must decide when it is desirable to cut down and finally withdraw it

Of medicines, the old fashioned mixture of bromide and strychnine is I am sure, valuable A ½ gr tablet of luminal carried in the waistcoat pocket

as a result, [illegible] waves of restless depression may have a physical as well as psychical basis.

Of diet, there is not much to be said. These patients are apt to bolt their food, and the diet therefore, should be of an easily assimilable kind. Alcohol as a refuge from depression is a danger as an aid to digestion, useful.

Restlessness is apt to lead to excessive smoking, which should be checked.

Constipation is a common symptom and I believe this is one of the few illnesses during which a regular mild laxative may be necessary.

Sexual intercourse should be practised sparingly but need not be avoided. This may be a point upon which advice may be needed. When sexual appetite, as often, is diminished or lost, the attempt is harmful—a fact of which both partners should be made aware.

In the stage of recovery, there will often be phases of a day or two at a time when the patient feels well. It is unwise to suppose him recovered until he has remained well for a fortnight. Then it will, as a rule, be safe to let him return to his normal level of mental and bodily activity.

The problem of treatment becomes much more difficult in the case of a man who is too ill to continue at his work, or a woman unable to carry on her household duties. Here I believe the woman of the poorer classes is more fortunately situated; she has got to go on, she does go on, and having to go on helps her to get through the illness. For those who can afford it, the old-fashioned sea voyage is still a sound plan, though its suicidal opportunities must be considered. Lesser changes of environment are of value. If the patient goes away, there should be a doctor at the other end forewarned of the nature of the illness and the treatment adopted.

(3) *Preventive*.—As in other maladies that have their roots in heredity such as asthma and migraine, the liability to attacks cannot be removed, but when the liability is recognized something may be done in the way of preventive treatment.

In dealing with a child with a family history of this disease I should be more than ordinarily careful that he should learn to endure pain, both physical and mental. I should be on the lookout in the phases of puberty and adolescence for any evidence of mental depression or preoccupation. If he came to me at this age with physical symptoms of a functional type I should not be content with simple reassurance, but should invite his confidence with regard to sexual worries, particularly the problem of masturbation. So many boys are overburdened at this age with unnecessary fears. They believe that they are alone in their failure, that they have committed the unforgivable sin that they are candidates for consumption or insanity. So much can be done for them by a frank exposition of the subject. If a person of such inheritance shows symptoms during adolescence, I should look to the possibility or probability of further attacks. If asked my advice as to his

choice of career I should advise one well within his compass rather than at its limit I should advise for his health that he be encouraged, if necessary pressed, into social contacts, and into the acquisition of hobbies of the kind that engage a man's interests beyond himself In the matter of his marriage, doubtless he would rather see guidance were it offered but the saving of a man or woman with the depressive liability is often the choice of the right partner I should be disposed if I knew him to be passing through a time of particular domestic or business worry to inquire after his sleep and to prescribe a hypnotic and a laxative if need be In the case of a woman I should watch the menopause with care being ready on occasion to give similar prescription and advice

On the physical side I should be prepared for the fact that a depressive illness may be precipitated by fatigue, infection, intoxication, or simple insomnia from physical pain or mental stress, and in women not uncommonly, by childbirth Through a confusion of symptoms with causes the importance of fatigue as a cause of this kind of illness has been much exaggerated in the past, but I have seen a good many cases in which a succession of late nights from work or play or both combined or extreme and unwanted physical fatigue, have seemed to initiate an attack The person with the depressive liability should obtain a regular eight hours in bed, and should not submit himself to the strain of two late nights in succession

I have seen many attacks follow such simple infections as influenza The potential sufferer from this illness needs double the convalescence necessary for the ordinary person I have, also seen the illness develop on several occasions after a comparatively simple operation e.g., for appendicitis or haemorrhoids, when I believe that a more liberal use of morphia or medicine during the post operative week might have prevented it What I have said of the need of extra convalescence after illness applies with equal importance to the puerperium

Another particular risk to which the depressive is liable is addiction to alcohol There is a not unnatural tendency in the person accustomed to its stimulating effects to have recourse to it at times when energy and optimism are at a low ebb There is no doubt, apart from the danger of a habit that alcoholic excess may precipitate an attack

[illegible] WHEDON [illegible]

[illegible] diseases which [illegible] hysis into [illegible] in methods of investigation

Although usually unassociated with any ostensible physical [illegible] disease still remains clear cut from its symptoms The patient loses his ability to cope with his environment his powers of concentration disappear and his self confidence leaves him until he becomes quite unable to do his work and even small decisions assume huge proportions The symptoms are almost entirely on the mental plane and it is little wonder that, suffering as he does from distaste of his environment his mind turns from external matters to a deep introversion towards himself and his sad condition until his only interest in life becomes his own morbidity

One of the greatest initial difficulties in treating neurasthenics is the combating of their idea that their case is a very rare and complicated one They feel that no one can ever have had such obscure symptoms before that they, surely, must require some great specialist to understand them and that even he would find them interesting and unusual

Now when a man who has been previously healthy develops neurasthenia we are justified in asking ourselves 'Why has he deteriorated in this manner?' Years ago we fell back on some such explanation as "Oh he's neurasthenic—his nervous system was probably poor right from the start and he's just not up to the strain of life" This explanation did not take us very far and yet there is a modicum of truth in it—the mentality of the neurasthenic *is* probably developmentally poor, but this only gives us the predisposing cause of his condition Something else is required to throw him over the precipice which separates health from disease This something else is almost always some form of toxæmia and the treatment of the neurasthenic lies primarily in the search for the cause of this toxæmia The most likely sites are apical infection of the teeth and in the sinuses where x ray can be of the greatest help

It is true that some forms of neurasthenia do not appear to be due to a true toxin but even in them the analogy can be found in some over-secretion which acts as a foreign toxin There is the adolescent neurasthenia which may be due to sexual excess and here the overdose of gonadal secretion is probably the deleterious influence There seems no doubt that worry may cause neurasthenia despite the fact that worry is often a symptom We know that the anxiety states cause over secretion of the adrenal glands and in this we may again have the non-foreign toxin as a causative agent Intestinal toxæmia does not seem to be a frequent cause of neurasthenia although it is often incriminated

It may thus be taken as a working hypothesis that neurasthenia is due to (1) an inherent predisposition from the psychological type of the patient

and (2) an exciting cause of a toxemic nature. When a neurasthenic comes into hospital the first few days are spent in radiological bacteriological and other relevant investigations and this time is a good one to attempt to gain the patient's confidence. This is best done by impressing him with the fact that he is suffering from a well-known disease and is not the victim of some unaccountable happening. He is told that investigations are being made to find out the cause of his trouble and that when it is discovered it will facilitate and hasten his cure. If, as the result of the investigations, some toxic cause is found the patient has his first ray of hope and his treatment may be propitiously commenced. It is extraordinary how modern life encourages introversion, and Press articles which are intended to help health often have the reverse effect by turning the mind from the unconscious enjoyment of health to the possibilities of disease. "How to keep well in summer," "How to avoid colds in winter," and "Advice to the man of 45" are the sort of head lines which encourage introversion and which overlook the fact that true health is an unconscious state due to the absence of disease just as darkness is merely the absence of light.

A short description of one or two recent cases of neurasthenia may be of interest as bearing on some of the points mentioned.

A handsome and well set up officer came into hospital invalided from a foreign station with neurasthenia. He had no physical signs whatever—unless one could include the rather tired look in his eyes under this heading. He complained of inability to concentrate on his work, difficulty in making decisions and general lack of confidence in himself. He had no worries outside his illness. The inevitable investigations revealed two dental abscesses and the removal of the affected teeth together with a spell of sick leave restored him to normal health.

Another officer of average physique but of a quiet unassuming disposition was admitted with neurasthenia. He had been under treatment for some months in a sort of psychoanalysis home. I imagine this is the kind of place in which neurasthenics would be really happy. An air of sympathy and ease surrounds them and they are able to revel in an orgie of introspection in which their investigator proves to be an admirable assistant. This officer got no benefit from his stay in the Home, though he looked back on his time there with considerable satisfaction. It might have been better if the Home had looked for some physical cause for their patient's neurasthenia for they might have found as we did, that he had some apical abscesses. When these were attended to and he was sent on some sick leave he improved enormously, and I think he would have gone on to a complete cure had he not lost all interest in work during his long neurasthenization and the possession of a small income decided him to retire and give up the unequal contest with his environment.

A third case may be of interest. It occurred in an officer of the thin and wiry type, hard as nails and with a good service record behind him.

He came into hospital with congestive headaches which were found to

he due to an infected ethmoid He had no neurasthenic symptoms then When the ethmoids were evacuated the offensive pus nauseated the theatre staff He recovered normally and was sent on sick leave Before this leave was up he returned in an acutely neurasthenic condition I argued that this was a case where the body had become habituated to the poison from his ethmoids to such an extent that its removal was sadly missed by his nervous system If this explanation seems far fetched let us consider for a moment the case of a tobacco or alcohol addict from whom their poison is suddenly withheld Indeed, this officer's condition on admission from sick leave was very suggestive of a mild delirium tremens, though I was able to prove that he was very abstemious in the matter of alcohol I wished I had had the foresight to have had a vaccine made from his ethmoids and been able to prove this theory by giving him a daily dose of his old poison However he made a good recovery and took up an important appointment

That neurasthenia is, in truth an inability to cope with environment is supported by the fact that a number of cases seem to occur on a change of environment, such as happens when a man who has been doing work of a manual nature is put on to what may be called brain work I am thinking of some cases of promoted men Selected for promotion on account of their ability as seamen they find themselves confronted by a stores account book, lines and columns, figures and items Unused to it, they are at first confused then worried, then wake up with spanners or cod line on their mind, and the step to neurasthenia is not then far off

Let us then record neurasthenia as due to firstly, a predisposition on account of mental type and secondly, as due to the operation of some poison deteriorating the nervous tissue As our methods of investigation advance we will find that a cause is generally ascertainable and that our cases of what may be called primary neurasthenia will become fewer and fewer

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NEURASTHENIA

By A MEDICAL OFFICER R N

A FACT which is accepted by all, is that some are born with mental defect others acquire mental defect and others remain normal Perhaps when we remember some of the world's greatest men some are born potentially supernormal

The NORMAL so far represent the majority that the fact that there is normality is accepted Mental normality is, within bounds, elastic, and minor departures from the median line are due to ideas the results of environment which appear reasonable to all within normality, though not necessarily accepted as applicable to themselves The NORMAL, too, reacts normally to his surroundings, to changes in political, social, religious or

[illegible] mally, by the opinion of the majority [illegible] they are normal thoughts Lastly, the NORMAL is so developed that he can stand the wear and tear on his nerve units which is caused by the demands made upon them in the course of life

The NORMAL mentality does wear out if the subject lives long enough We have all seen evidence of this in the abnormality of very old age [illegible] however, the cause is known and the physique of the person so [illegible]ired that he is not a danger or menace to society, though he may be very trying to the individuals who are, of necessity, associated with him

It is not proposed to consider those born mentally defective, but attention is drawn to the statement made by Dr C P Symonds (ante) who writes ' The distinction between a psychoneurotic and a psychotic form of this illness (nervous breakdown) is NOT, to my mind, fundamental It is quite an arbitrary distinction which is of some practical value from the social and medico legal point of view, but that is all ' I understand, by this that the born mental defective in the absence of demonstrable developmental or organic lesion, and the psychoneurotic are degrees of one and the same condition hence the study of the lesser condition of neurasthenia or potential neurasthenia is also the study of some conditions which gives rise to more advanced mental defect

Cases of organic disease, i e , syphilis, tumours and endocrine dysfunction, may develop neurasthenic symptoms but such cases are not being considered here, though it may well be that every case of psychoneurosis is organic in its origin The term organic is understood to mean that there is change in the neurons concerned, which, ideally, should be demonstrable, but at present is not Such change may be produced from various causes Surgeon Captain Edgar (ante), quotes cases in which foci of toxins were found Here then, we have organic disease situated in the apex of a tooth or in a nasal sinus, yet the symptoms all indicate some change in nervous function and because the abnormal function of the nervous system cleared up as a result of removal of the foci from which the toxins were distributed it would appear that these toxins did produce the temporary organic nervous lesion which was manifest in abnormal function

Thus we accept toxins as a cause of neurasthenia or nervous breakdown But all persons with apical abscess or sinusitis do not develop nervous manifestations We do know, however, that some persons are born mentally defective in varying degrees from the obvious to the practically unrecognizable We can then visualize others who are potential mental defectives and these also, in multitudinous degrees this is rendered more than conjecture by the frequent family history of a like or allied mental defect Dr Symonds writes ' The family history supplies the main factor There is a constitutional liability to the illness '

We have seen that toxic foci were the cause in the cases noted by Surgeon Captain Edgar , yet we have similar toxic foci in patients without the development of neurasthenic symptoms On the other hand, we have

[redacted] exposed, for the same period to infection of adult [redacted] develops the disease the others do not. In this case we know that the natural immunity varies and that further immunity can be acquired by sub clinical disease or multiple subinfective doses of the causative agent hence our children may not have been comparable. Indeed if we had previously Schick tested these children, we could have foretold the probable result of the exposure. There is no Schick test for the potential neurasthenic or nervous breakdown case except the family history and, in the absence of that we do not know if two or more persons exposed to the same mental stress whether toxic or psychic are comparable individuals as far as their liability to reaction to the stress is concerned, yet in many cases it is possible to foretell a nervous breakdown in individuals if they should be exposed to stress by their appearance, though it must be admitted that this appearance may be due to the fact that nervous breakdown has already developed but only to a degree that is, as yet, not definitely diagnosable. The case of peptic ulcer frequently suggests that he will develop symptoms of nervous breakdown as a result of his ulcer or in the event of other mental stress being superimposed and he, as frequently, does develop these symptoms. Is the nervous breakdown a toxic result of the peptic ulcer or is the potential liability to nervous breakdown the cause of the peptic ulcer which, when developed transforms the potential breakdown into actual nervous breakdown?

We see cases of acute perforated gastric or duodenal ulcer with no evidence of nervous breakdown met with the appearance of being likely to breakdown, yet the patient with chronic peptic ulcer more usually than not, has, also, nervous manifestations to a greater or lesser degree and these nervous symptoms do improve or clear up while the patient is benefiting from purely medical treatment whether this results in a cure or not. This does suggest that the neurasthenia is the toxic result of the ulcer and not the cause of it.

Naval medical officers, while they have many interests and friends, professional and otherwise outside the Service, still have their chief interest social life and professional work in the Service. Their experience is, therefore, chiefly in relationship to Service patients.

Neurasthenia or nervous breakdown does occur in the Royal Navy, and very frequently, the outstanding symptom is the patient's inability, actual or believed, to carry out his duty efficiently. The patients who exhibit this type of symptom are of two classes. The first, the young rating who develops symptoms of nervous breakdown early in his Service career and in whom the family history is frequently suggestive of pre-natal neurasthenia, the symptom onset is determined by the fact that he has reached a stage when minor degrees of responsibility are a part of his duty. In many cases he is anxious to remain in the Service and for this reason broods over his real or imaginary inefficiency. The second class is the brilliant rating who by hard work—both physical and mental—

efficiency and [illegible] promoted to a situation which is different in regards nature of work and social environment to the sphere to which he is accustomed [illegible] having done so well and reached the apex of his own sphere and having passed into another he is over-anxious to play his part efficiently in all respects His family history frequently shows that other members have been above the average at school and in other walks of life

In both these types it would appear that, as Dr Symonds states, the family history supplies the main factor in the majority of the cases, yet, in some, such a factor does appear to be absent

In both classes the determining cause appears to be a constant and unremitting mental strain, for particularly with my second class, the patient has worked hard and efficiently in the highest grade of his own sphere without nervous breakdown Because his work was within his knowledge, it was performed with subconscious effort only, and when not on duty, his amusements, his social custom and his conversation were also knowledge Hence, even when he was required to make mental effort on duty he had opportunity for mental recovery when off duty, for his off duty occupations did not make unusual call for mental activity Having attained his higher status, his work makes constant demand for mental effort, this is intensified by the anxiety to do well, and when off duty this mental activity is not relaxed, for he has, consciously, to act the part which is, normally natural living in his new social environment

The number who develop nervous breakdown from my first class represents a very small percentage of the total of younger ratings, yet the same cause is present, i e. anxiety to do well and fear of having to leave the Service, hence there is constant mental stress present

In the second class the percentage of breakdown is, I believe, though I have no figures considerably larger than in the first class I hope that I have indicated that the mental stress which has determined the onset has been prolonged and is in constant operation Surely such mental activity can, physiologically, have two results (1) Degeneration from use just as the condition occurs in the very elderly, (2) over production of the normal toxic products of nerve-cell metabolism to a degree for which elimination processes have not been provided

Degeneration —This is not always the factor, for it is known that with relief from a discovered cause of mental anxiety these patients do recover, though they may be left in a condition which renders them more easily liable to a recurrence but in spite of removal of the cause of supernormal mental activity, some do not recover Is this due to degeneration as a result of prolonged overwork and prolonged exposure to toxic influences?

Toxic Causes —Surgeon Captain Edgar has given examples of such cases and suggests that toxins are always the cause but are not always discovered Dr Symonds says Individual attacks may be precipitated by — intoxication (e g bacterial influenza, chemical alcohol) Hence both these writers are in agreement that toxins are a cause Dr Symonds

[illegible] but we have seen that, in his [illegible] the family history is applicable to [illegible] factor.'

If toxic products of metabolism are a cause in those cases where no other source of toxins is found, why are there not more cases of neurasthenia? For there are few if any of us who have not, at one time or another, been subject to supernormal mental activity and yet have escaped neurasthenia. There appear to be two possible answers to this. First, it is the potential mental defective who breaks down under stress, and the majority of us are normal.

Dr Symonds in his contention that there is no fundamental difference between the psychoneurotic and the psychotic forms of mental derangement, states, "There is a degree of difference too, between the state of the man who wishes he might be killed in an accident and the man who would like to take his own life, but is restrained by the *thought* of his family" (the italics are mine). The same idea is, I think, expressed in the adage 'All work and no play makes Jack a dull boy.'

The man who *thought* of his family and Jack who left work for play do exactly the same thing; both relieve the activity of those mental units which are overworked by transference of thought and hence avoid the accumulation of toxic products of metabolism in the overworking units. This is the second answer.

I recollect the case of one man who, having suffered sudden bereavement, toured the whole of England in his car going as fast as he reasonably could. Car driving necessitated sustained mental effort involving units other than those concerned with his sorrow over which he had lost control, except by thought transference, and he had lost the power of thought transference except when reinforced by his car driving.

If there is any truth in the suggestion that metabolic toxins determine or precipitate the onset of neurasthenia or nervous breakdown when other toxins are not demonstrable, then it would appear that such accumulation of toxic products is due to a lack of higher centre control over the units at fault, so that the patient is unable to produce thought transference.

There can be three causes for this lack. First, a developmental defect. This is untreatable at present, the psyche can only be guarded as far as possible. Second a defect produced by accumulation of toxins. This puts toxins as the cause which is not generally accepted, except when acting on a previous developmental defect. Third lack of other interests, hobbies, occupations &c., to which to transfer thought. I believe this to be of importance, especially in prognosis and treatment.

The Treatment.—Dr Symonds has given outlines of treatment in his paper on 'Nervous Breakdown.' I cannot add to this, but I would comment on the fact that whether a patient has other interests or occupations or not, when he is in the hands of his doctor whether good or bad, he has other interests immediately, either in proving to himself how good and efficient his doctor is or, alternatively, how little the doctor knows

about him as compared with his own knowledge of himself It also seems that the analytic method of treatment merely produces a bait for thought transference, the method of production enhancing the value of the bait

Dr Symonds says, 'In the case of a man, keep him at his work if you can watching his ability to carry the load, and lightening it for him where ever necessary' This is, of course impracticable in the Service where the failure of one man may jeopardize the lives of others or cause considerable material damage and because the environment is such that suicide on the impulse of the moment is so easily accomplished and so difficult to guard against

The essentials of treatment then are Physical and mental rest as far as is possible, and occupation which allows of and assists thought transference The results aimed at are The complete elimination of accumulated toxins, rest for the injured nerve-units and repair of the damage evidenced by functional change

DESTROYER SERVICE

By Surgeon Lieutenant Commander T C H NEIL M B Cantab R N

It has been suggested to me by a colleague that a few hints on this particular branch of our Service might be of use to medical officers taking up a destroyer appointment

The flotilla at present consists of one "destroyer leader commanded by Captain (D), and eight destroyers, which are in turn, divided into two divisions of four, each commanded by a Commander his ship being known as the "divisional leader The individual destroyers are usually commanded by Lieutenant-Commanders Captain (D)'s Staff consists of the following Flotilla Gunnery, Torpedo and Navigation Officers, Secretary Medical Officer, Engineer Officer, Schoolmaster, Warrant Telegraphist and D F and I Gunner Theoretically, all these officers should be borne in the 'Leader but owing to lack of accommodation, the Medical Officer, schoolmaster and Warrant Telegraphist, are each accommodated in one of the other ships in the flotilla the Medical Officer often being borne in one of the divisional leaders Such an arrangement prevents the Medical Officer from being in constant touch with his Captain (D) which is unfortunate, but unavoidable

Medical Organization

A flotilla has one Surgeon Lieutenant or Surgeon Lieutenant-Commander and one Sick Berth Rating usually a senior leading rate, except in the case of the China Flotillas, where, owing to the fact that the flotilla is rarely together, there may be two or more medical officers with accompanying sick berth staff

Sick Bay accommodation has improved greatly in the modern destroyer flotillas Each ship possesses a properly constructed Sick Bay, with a

swinging cot inspection lamp, running water and a small electric kettle The Sick Bay is situated on the starboard side of the torpedo the Medical Officer's cabin being in a similar compartment on the port side

In the 'V and W' class of destroyers the Sick Bay accommodation was often woefully inadequate, even in the ships carrying the Medical Officer It may also be mentioned that the senior upper deck Petty Officer in all the ships of the flotilla, known as the 'Torpedo Coxswain' is a very useful assistant to the Medical Officer, as he is well trained in First Aid, and is usually possessed of sound common sense As in big ships the Medical Officer makes his visit to the sick bay at 0900 where he sees all those men reporting sick from his own and other ships of the flotilla In each destroyer, men wishing to see the Flotilla Medical Officer give their names to the Torpedo Coxswain as soon as possible on turning out, and he arranges for their transport to the medical officer's ship If the Coxswain, or one of the officers, considers the man too ill to be moved, a signal is made to the Flotilla Medical Officer who visits him without undue delay Owing to lack of Sick Bay accommodation, serious cases, those likely to be ill for some time, those requiring x-ray examination or treatment for venereal disease, cannot be kept on board and must be removed to a Naval Hospital, Destroyer Depot Ship or Hospital Ship

Some idea of the numbers to be dealt with will be gathered when it is observed that there are approximately 1 200 men all told in the flotilla, excluding officers a total which is not far off the complement of a battleship On the other hand, these men are often of a better physique, and thus less liable to minor illnesses, than the majority of ratings Men with a history of repeated infections of venereal disease are never drafted to destroyers Man who contract venereal disease are never kept in the ship any longer than necessary, owing to the risk of infection, and the lack of facilities for isolation and proper treatment

The Flotilla Medical Officer is directly responsible to his Captain (D) for the medical welfare of the flotilla, and, although he need not attend divisions on Sunday morning, it is often advisable to "repair on board the Leader at a suitable time to interview him

For the purposes of medical organization the various Flotilla Medical Officers are distantly controlled by the Squadron Medical Officer who is carried in the ship flying the flag of the Rear Admiral, or Commodore (D) The weekly Health Reports are made to this officer by the Flotilla Medical Officers concerned and he also conducts periodic inspections of all the flotilla His advice and help may be obtained in the event of any little difficulty or disagreement cropping up

Medical History Sheets

These are kept by the Flotilla Medical Officer and are as can be imagined, fairly numerous Under this heading the question of vaccinations and re inoculations might be dealt with This is a frequent source

of difficulty in [illegible] great tact is used It is obvious that in the course of a commission a number of the personnel require re-inoculation and many re-vaccination [illegible] them, possibly in one ship's company, falling due at the same time It is of course, impossible to do all these men at once, as the Executive Officers concerned are naturally apprehensive of too many hands being even temporarily indisposed It will be pointed out to an unduly enthusiastic Medical Officer, and not unreasonably, that in a destroyer every man counts The Medical Officer is, therefore, forced to scrutinize the medical history sheets frequently, and do as many as possible in small numbers at a time

Transport

This is sometimes a source of difficulty Destroyers are not very plentifully supplied with ' power boats, and the one which they have is in constant use It was understood in the Third Flotilla that the ship desiring the attendance of the M O was responsible for sending a boat and this on the whole was adhered to Too often, however, the duty of transporting the M O devolved on the ship which accommodated him, somewhat to the detriment of his popularity therein

Transport of patients to hospital ship or depot ship is, of course, always carried out by the ship concerned The handling of a heavy patient into a boat down a destroyer's narrow gangway often presents a problem This can be avoided by lowering the patient directly into the boat by means of the " torpedo davit

When the flotilla is on passage during a cruise or other activity, the usual procedure is to steam ' in single line ahead '

If the presence of the flotilla M O is desired on board any destroyer, the requisite signal is made to his ship repeated to Captain (D), and the two ships concerned drop out of line and close one another as far as possible, with due regard to the weather The flotilla M O is then " dropped in the sea boat and accompanied by his L S B A, is taken over to his prospective patient's ship where he gets on board as best he can by means of a ' jumping ladder (It is a comforting thought to the medical officer at such times, as he climbs up the side of a rolling destroyer in a rough sea to know that he is a reasonably strong swimmer)

At night a searchlight is kept on the boat by the ship despatching her

It may be added, for the benefit of those going to destroyers, that this procedure is not so bad as it sounds

Flotilla M O s have been known to enjoy it, and one of the writer's acquaintance received his ' boating colours, " to suitable accompaniment on his being relieved He had been " dropped in a whaler more often than any other officer in the flotilla

War Organization

In peace time this [illegible] out in [illegible] to the organization in a big ship

The following numbers should be trained in first aid Two from each gun's crew, two from each tube's crew, two on the bridge, one in the transmitting station, two in the engine room, two in the boiler room, all the officers

These men are lectured to by the flotilla M O as convenient and given a short oral examination and, if considered reasonably proficient, a notation to the effect that they have been instructed in first aid is made on their service certificates

During Captain (D)'s inspection of the flotilla (a necessarily lengthy procedure) the flotilla M O accompanies him to the various ships to be inspected

When the ship's company are at 'action stations' Captain (D) inflicts the 'casualties,' and it is the duty of the M O to observe how they are being dealt with, and render a report to Captain (D) at the end of the inspection

It is also the duty of the flotilla M O to see that first aid bags are issued to the various guns crews tubes &c, on action stations being sounded off

To have these made and to see that they are kept properly filled with dressings, tourniquets, &c is not an easy job in a big ship but with patience and perseverance it can be done Occasional mustering of these bags will prevent their contents being used as cleaning rags by "spit and-polish enthusiasts.

For the purpose of peace time drills and inspections, the writer used a "skeleton set" of dressings, &c with the concurrence of the Captain (D), i e about one tenth of what would be issued in war time

Bills of Health

These important documents are apt to be rather a "thorn in the flesh" of the flotilla M O Instead of having one which sometimes can be quite difficult to obtain and deal with the flotilla M O has nine

Theoretically, when the flotilla sails these should be in the custody of the M O, but the writer found that it was better to have them delivered to the individual commanding officers the night before sailing, then if circumstances necessitated the detachment of one or more units during passage or for exercises there was no trouble

The routine on arrival in port was for all ships to send their bills of health to the Leader, the flotilla M O being by that time on board to receive them He then proceeded on shore and endeavoured to obtain pratique for the ships in the usual manner

It may be mentioned that consequently the Medical Department have to be forcibly reminded to send over this [illegible] which is sometimes forgotten in the [illegible] Medicine Chest.

The first in the Tropics requires [illegible] with [illegible] prospective destroyer M.O. unduly for such is far from my intention provided he is a reasonably good sailor life in a destroyer flotilla can be very pleasant for the medical officer and if the various small snags are known and anticipated, many misunderstandings can be avoided

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NOTES ON THE LEPER COLONY AT BERHALA SANDAKAN NORTH BORNEO

By Surgeon Lieutenant Commander M A Graham Yoell M B (Cl) R N

(I) Introductory Note

Leprosy is met with in many parts of China In a country where skin diseases are common early unrecognized cases of the disease undoubtedly occur with frequency and, in the poorer and more sparsely populated districts, the problem of segregating and treating such cases is a difficult one Leprosy is also met with in Europe, India, Japan the Philippines, tropical Africa Brazil, Guiana, Colombia and the British West Indies Climatology has an important bearing on its incidence, and high rainfall with a hot and tropical climate appears to be directly related to a higher incidence of the disease It has been suggested that in such climates (*a*) insect bites are very frequent and these skin punctures produce a route of entry along which lepra bacilli may gain access to the tissues and that (*b*) conditions are favourable to the extra corporal existence of the bacilli

So far attempts at cultivating the organism outside the body have not met with success Rats have been infected by inoculating them with exudate, containing bacilli, from the skin lesions of leprosy, but when inoculation has been delayed for a day or longer no symptoms have ensued It would appear therefore, that the specific organism has a low vitality, which it tends to lose if separated from living tissue for any considerable length of time It is easy, usually, to obtain an abundance of acid fast lepra bacilli from (*a*) skin-nodules and from (*b*) infected nasal mucosa and mucoperichondrium

In the early stages there is not much degree of local reaction to the organism inflammatory zones appear, often with general febrile manifestations

In the nerve type of leprosy the organisms are scanty and scattered, tending to lie under the neural sheath Inflammatory changes and thickening occur and there is a tendency for the infection to die out altogether The nerve type tends to be preceded by a macular stage

as erythematous circular eruptions, with a hypoæsthetic border surrounding a paler or anæsthetic non-sweating central area Bullæ may appear at various sites, e g hands and feet and may burst or ulcerate As the nerves become more involved trophic changes appear and the muscles undergo atrophy Ulcers and subperiosteal abscesses with bone necrosis supervene On the sole of the foot a perforating ulcer may form During 1931, at the General (Mission) Hospital, Wuhu, China a case of the latter type was seen The ulcer was situated under the ball of the great toe, and it was thought that amputation through the ankle would suffice to eradicate the disease At operation, however, it was evident that the anterior tibial and peroneal nerves were infected, and that amputation at a higher level would be necessary, if the patient was to have any chance of getting rid of diseased tissue Eventually a Gritti-Stokes osteoplastic amputation through the knee joint was performed

In the nose the muco-perichondrium and septum tend to ulcerate, so that the shape of the organ becomes greatly altered, and the tip of the nose may disappear altogether

In the face the muscles of the eyelids may be affected so that drooping of the upper lid and eversion of the lower eyelid result Corneal ulceration, with blindness, may follow

It is important to remember that children seem to be highly susceptible to the disease and that, therefore it is necessary that they should be segregated from infected parents at birth Heredity has not been shown to be an important ætiological factor but close and long association with lepers is dangerous

(2) Leper Settlement at Berhala

While H M S *Adventure* was paying a brief call at Sandakan, North Borneo, for the Jubilee celebrations on May 6, 1935 I was permitted by Dr Dingle Principal Medical Officer North Borneo to accompany the District Surgeon, Dr Luce on one of her frequent visits to the Leper Colony at Berhala

Berhala is a small island about three miles from Sandakan with a beautiful and typically luxuriant tropical vegetation There is no summer and winter in North Borneo the climate being equable throughout the year On the coast the temperature rises from 74° F in the early morning to 87° F in the afternoon On an exceptionally hot day the thermometer may reach 92° or 93° F but the heat is rarely oppressive

The annual rainfall varies from 60 to 180 in , according to locality Fig 1 gives some idea of the appearance of the island with its abundant palm trees, as one approaches the landing jetty Its population, except for a few fisher-folk who are not allowed within the leper settlement itself consists entirely of men and women and a few children, who are afflicted with leprosy During the last five years, the number of leper inhabitants

[illegible] from fifty three to seventy-two These lepers for the most part are Malays from the coastal towns but there are also a few natives from villages adjacent to the coast For as long as they show a positive reaction to the disease they are not permitted to leave the island

Some of these patients have been in Berhala for over fifteen years while others have arrived only recently To a certain extent the colony is self governing, one of the inhabitants being chosen as headman He supervises the discipline and order of his fellow patients and represents their needs to the appropriate authorities He is also responsible for the



Fig 1 —Sea front at Berhala

distribution of food and such small luxuries as sweatmeats and cigarettes For carrying out these not very onerous duties the government pays him about $5 00 monthly Food is sent over to the settlement daily from Sandakan and consists of adequate rations of butcher's meat vegetables rice, &c For Mohammedan patients, cattle must be killed specially by one of their own faith Some vegetables are grown in Berhala, and the dietary is supplemented by fish which the patients catch for themselves

(3) The Buildings

The buildings in Berhala consist of a main treatment hut, a hospital ward and several small cottages The latter are constructed with a cement floor on cement piles, and the walls are of *kajang* attached to angle iron supports The roofs are made of *nipah attaps* Cases not requiring

hospital treatment are housed in [illegible] cared for in the hospital In the hospital all types of the [illegible] Frequently there are cases of leprosy in association with other diseases, such as syphilis and tuberculosis. One very advanced case was seen with erosion of the nasal mucoperichondrium and nasal bones, larynx and eyes were attacked and nodules on various parts of the body had broken down, were suppurating and had formed ulcers, while the bones of fingers and toes had long since become necrosed, and were gradually disappearing entirely He was a pitiable object, and one felt that the sooner death ended his sufferings the better This of course was an extreme case but there



[illegible] Nodular type of leprosy

are others much less depressing A child aged 10 had yielded to treatment apparently and was very much better as regards his local lesions and general health

(4) Types of Cases

No case is transferred to Barhala until the suspected diagnosis of leprosy has been substantiated beyond all doubt The tendency is, therefore, to admit cases at an earlier stage of the disease than was the case formerly, owing to present-day diagnosis being more efficient Sometimes however in the outlying villages of North Borneo a case showing lesions of an advanced degree remains undetected but as soon as it is discovered and diagnosed admission of the patient to the leper colony is arranged for forthwith

It is remarkable to what extent the rate at which the disease advances varies in different cases One case who has been in Berhala for two or three years, was in much the same condition as on the day of his arrival, while another, a youth of 25 after being under treatment for about three months, evinced a very marked aggravation of his symptoms Thus, leprosy shows much variation in its development while the extent to which each individual patient yields to therapy shows marked divergence

(4) Incubation Period and Symptoms

The incubation period of leprosy is uncertain, authorities state that it may vary from a month to several years Early symptoms may

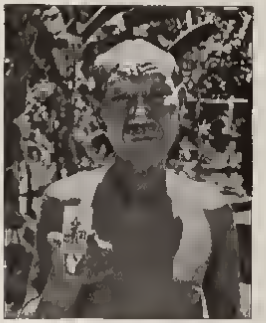


Fig 3 [illegible]

be vague derangement of health with gastro-intestinal symptoms, feverishness, fatigue, malaise and sweating With fresh eruptions there is usually a corresponding rise of temperature The photographs illustrate some typical cases Fig 3 is one of the nodular type This commences generally as a raised macular eruption with, subsequently brownish pigmentation Later, on the same site, a nodular eruption occurs which is quite typical These nodules tend to break down and ulcerate, but they may remain unaltered and eventually disappear Various parts of the body including eyes and larynx, may be involved Depilation occurs so that the patient loses the hair of his head and his eyebrows tend to disappear The cheeks become pendulous and the facies assumes the well-known "leonine" appearance The photograph of the

patient holding a cigarette packet in the right hand is a typical example of this peculiar change in facial appearance The nodules cause marked changes in the tissues mainly in the parts where granulomatous cells tend to accumulate and among which on staining a section masses of lepra bacilli can be demonstrated

In the neural or anæsthetic types, muscles may appear first along the distribution of peroneal and ulnar nerves these lesions being associated with patches of anæsthesia Hypothenar and intercostal muscles tend to atrophy, causing contractures often resulting in the characteristic *main en griffe* Osseous absorption follows leaving like nails remaining at the end of the



Fig 4 Young girl Anæsthetic type with osseous absorption of fingers

deformed and shrunken fingers which along with the toes tend to disappear altogether

In the mixed type of leprosy, both nerve and nodular lesions appear together, one or other type commencing first or both types may manifest themselves simultaneously

(b) Diagnosis

Lepra bacilli can usually be demonstrated in the nasal secretion and in the serum expressed from nodules It is obtainable by scraping a macular lesion with a sharp knife to remove the superficial hardened scales and by squeezing out the sero sanguinous contents Staining

is carried out by Ziehl Neelsen's method which shows up the bacilli quite clearly

From a case of macular leprosy in a Chinese youth of twenty-seven, several smears were made and two films of exudate in which lepra bacilli could be seen clearly, were obtained

(7) Treatment

The main drug used at Berhala is hydnocarpus oil It is employed as follows A mixture made up of creosote 4 c c and hydnocarpus oil to 100 c.c is administered weekly by intramuscular injections The actual routine of injection is carried out by Chinese dressers who have special experience and training to qualify them for these and other clinical duties, under the supervision of the District Surgeon at present Dr Ince On the day of administration the patients are collected in the Main Treatment Hut, where they are inspected, their present condition and progress noted and the various doses as prescribed for each case, are then given The mixture for intramuscular injection is measured out accurately, the site—the buttock although many seem to prefer the calf muscles—is sterilized by rubbing it with spirit, and the needle is inserted Massage of the injection site is carried out for several minutes afterwards

The majority of the patients seem to have faith in the efficacy of this injection therapy but there is always a number who refuse to submit to it or indeed to any form of treatment

The opportunity is taken at these treatment parades to cheer the patients and heighten morale, by distributing small gifts, such as eatables and cigarettes Most of them enjoy smoking, and cigarettes are always popular with them It is wonderful what a very great ameliorative psychological effect the weekly arrival of the launch, bringing the District Surgeon from Sandakan, is responsible for among this small and afflicted community

The mixture of hydnocarpus oil in creosote is exhibited in an initial dosage of 2 c c , and then, if tolerance is satisfactory, the amount is increased, in the following week, to 4 c c , and so on, by additions of 2 c c to a maximum of 10 c c In resistant cases, Dr Ince informed me, the dosage is sometimes increased up to 20 c c

The first signs of favourable reaction are that the papular patches become less defined and the nodules begin to diminish in size. During the exhibition of any drug used in the treatment of leprosy, it is important to bear in mind the different stages of leprosy, and the fact that an acute exacerbation may be followed by a temporary abatement of local symptoms It is necessary therefore, to be patient and guarded in giving a decided opinion as to prognosis when improvement follows immediately after treatment,

Chaulmoogra oil, by itself is not employed here, although I have seen

used in various [illegible] Chaul[illegible] Oil" as to its efficacy applied to Burroughs Wellcome [illegible] —(sodium hydnocarpate) — containing the sodium salts of the fatty acids of hydnocarpus wightiana oil, and a 3 per cent solution is given weekly, either intramuscularly or, in resistant cases intravenously Some have claimed good results by employing the esters of Chaulmoogra oil. The ethyl esters of Chaulmoogra oil have been combined in moogrol (B W and Co), and it is claimed that the presence of iodine as in "moogrol-iodised (B W and Co) reduces the degree of irritation caused by the ethyl esters



[illegible] to early stag[illegible]

8) Concluding Note

Any opinion as to prognosis must depend on such varied considerations as the condition of the patient the type of leprosy the stage of the disease and the degree of the bacterial's reaction to treatment The nodular and mixed types appear to succumb more rapidly Concurrent infections with toxæmia and septicæmia tend to expedite a fatal issue

All possible care and supervision is accorded to these sufferers at Berhala, but still the prospects of eventual complete recovery are by no means encouraging If the case is placed under treatment, while the disease is still in its early stages the prognosis is much better The patience and stoic resignation with which these Far Easterners endure this

disease is extraordinary, and must be seen by Westerners in order to be appreciated

I am much indebted to the Hon Dr Dingle, Principal Medical Officer and to Dr Ince, for their kindness and courtesy in showing me Berhala and much else of interest, professional and otherwise, in Sandakan

I have to thank Dr Dingle also, for permitting me to take these notes and photographs of Berhale, and for his permission to publish them

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MEMEL

By Surgeon Lieutenant J Ferguson Heggie D Sc M B Ch B R N V R.

Memel is the oldest town in East Prussia, and was founded in 1253 An important and developing centre of timber export on the Baltic just beyond the northern border of modern East Prussia there is little wonder that the repossession of the Memel Territory should mean so much to Germany The terminus of the Berlin-Konigsberg-Tilsit-Memel railway, it is also easily reached by steamer from any of the Baltic ports On entering harbour, the light at the breakwater marks the most northerly point of the Kurische Nehrung It enjoys a charming situation as well as a strategic one, as it lies at the north of the inland sea—the Kurisches Haff, the seaward shore of which is that peculiarly pleasant and intriguing Kurische Nehrung—the Riviera of the Baltic coasts

Klaipeda is its Lithuanian name, but this is a mere pencarp, the radicle is ever German—Memel The great majority of the residents of Memel are German—80 per cent the remainder, with several exceptions in business circles, are Lithuanians The Germans I met there last summer are a kindly healthy people, proud of their nation's long association with the town and its trade, the making and advancing of which has meant so much to them and which they still hold dear despite adverse racial conditions Older fabrics are being taken down and modern buildings take their place In the residential areas the villa predominates Wood is cheap and features much in interior decoration The parquet floors of older houses and more recent flats are beautiful—craftmanship has not suffered as the result of contract work Considering its antiquity, rambling narrow streets are not a characteristic The harbour is largely a frontage of quay, the docks do not extend far in town The river mouth is widened, like the Pudzeoch at Renfrew whence ferries ply to the quiet of Schwarrott and other watering places on the opposite shore of the Haff The upper river is not wide it pursues a quiet course from the pasture of the hinterland The town in many ways resembles Ayr—its docks larger, its shipping greater—and it also honours a poet A unique fountain commemorates the East Prussian poet, Simon Dach The municipal play-house (Schauspielhaus) and several cinemas provide entertainment, while

[1] Reprinted by kind permission of the Editor of the *Glasgow Herald*

the Zumma is the local Club where even with the exchange against one, an entertaining evening may be spent dining and dancing, for less cost than in some similar London establishments.

Foreign visitors are not unknown and 'tourists are catered for' in the full sense of the term. The *objets d'art* are amber and wood while occasionally on inquiry beautiful work in coloured grasses may be obtained. In amber, the usual beads, necklets, bracelets, cigar and cigarette holders are on view, but one is warned regarding the pure and the milk varieties—the latter, I was told, are made from the powder resulting from the fashioning of the better articles. In wood the pieces are not unlike many Swiss products, but bears and clocks give way to elks and well-worked platters. The book shops were well stocked, the covers of novels were very attractive—when seen the majority of publications featuring in windows were on travel and the photographer's art played the usual large part. Political publications, as contrasted with Berlin, were conspicuous by their absence.

Some of the girls I met, daughters of the consular corps, spoke very good English without trace of accent, Oxford or otherwise. Their words were pure and their address pleasant except that their treatment of unusual or long words can best be described as patient. They had read much Scott and Shakespeare, and were familiar with many of their characters. Stevenson also found a place, while Galsworthy and Buchan were popular among the moderns. It is still on my head that I introduced them to Edgar Wallace when I gave them "The Square Emerald" the "English Buch, given me one night by a conductor on the Cologne Berlin train.

The Lithuanian language I was given to understand has very few words *propre*. German is universally spoken but Lithuanian is taught in all schools and is an essential qualification for civil appointments, few of which are held by Germans. Heavy tariffs are levied on all imports especially on new clothes—woollen and silk. Wines all of which come from Germany, are expensive. Weisser Rheinwein (Hock) costs 10s per bottle. Motor cars are taxed on import on a basis of weight, tariff 100 per cent irrespective of vintage! The majority of cars were of American manufacture. The German populace moan under these tariffs most of which are recent and the result is that few have motor cars and all take care of their clothes. Many of the younger Germans whom I met were in shipping or wood-export and had been in this country for a year or so in shipping offices in London and Liverpool.

Considering these many things it is not surprising that their political sympathies are pro-Nazi. Last summer there was a certain degree of tension which in August was somewhat heightened or altered by the arrest of about a hundred German residents on account of their leanings. I have been unable to learn of the ultimate action which the Lithuanian Government took in this matter, but there is little doubt that, although not openly manifest, there is much dissatisfaction with the *status quo*.

The town possesses two hospitals which serve a moderate landward area. The Stadtkrankenhaus State Hospital is free and only for those who cannot afford to pay. Within recent times, the Red Cross Hospital was completed approximately 300 beds. This is a very modern establishment with eight-bed wards as a maximum; the majority of rooms are large, each with four beds while the private rooms which may contain one bed or even two are of such size as would easily accommodate four beds should the need arise. The hospital deals with all types of case, juvenile and adult. There is also a maternity section. Special urological investigation rooms and theatres were proudly shown. The x-ray apparatus is in every respect excellent, and includes deep ray therapy equipment. Their operating lay out is interesting, a central preparation room, for the sterilization of dressings and instruments, serves two theatres, one on each side. The Pathological and Clinical laboratory is very compact. The doctors were German. The kitchens shall not pass without mention. They were airy and well ventilated, and, if I remember rightly, they looked towards the Haff. I tested some excellent fruit, they did their own preserving!

I intend to go another time to Memel if for nothing else than to spend a holiday in Schwarzort. My friends of the yacht club will ferry me the eleven miles down the Haff. Sailing there, is not unlike the Norfolk Broads. Yachting is as popular a sport as riding or elk hunting and the club has several boats which correspond to our Sixes and Island Class. Two larger ones, like our Eights, are still good despite their years.

I have not yet been to Innisfree but I imagine it comparable to Schwarzort—peace comes dropping slow in this old world village of tall grass-grown shores. Bells of small churches still recall those I heard while slowly idling time in sanded bye paths near the shore where peculiar fishing nets were hung on poles to dry, in grass free creeks along the banks near the homes of fisher-folk. These were trawl nets, wide hoop-mouthed, the wooden hoop replacing beam and ground rope, smaller hoops were placed at intervals towards the apex of the cone. Eels also abound. As though a sculptor's work, fisherman and line stand out in relief from boat-bow; light and dark alone mark the hours. The limpid sand water is in harmonious keeping with that drugged quiet.

Strange harmony of contrasts! The hotel! In a fir tree glade up from the shore front white washed and tables invitingly laid, it stands. In equal quiet, service brings coffee or tea and the most delicious pastry cakes of snow-flake lightness with custard or cream, and, on top, fresh red currants in jelly. How refreshing on a summer's day!

Nature unspoilt is here. The wind from seaward forever drones or whines over the gale driven sand dunes—the home of the elk—through the sparsely timbered fir woods, across the Haff to the mainland.

On the seashore, bathing is pleasant in the bright sunlight, the old-gold sand carpet so soft on which to lie. When the wind rises the surf provides more sport. Only the giant sand dunes and the minus twilight recall me from my reverie to remind me that I am in Memelland.

Clinical Notes

TWO CASES OF INTRA THORACIC NEW GROWTH

By Surgeon Commander I L Gibson D M CHB R N

Case 1 —A G , aged 40

History —This patient was admitted to H M H S *Maine* on January 15, 1934 with a diagnosis of bronchitis and a history of subacute attacks of a few weeks' duration While in H M H S *Maine* he had a severe attack of dyspnœa on February 2, accompanied by pain in the right side of the chest He had occasional attacks of hæmoptysis starting from this time He was invalided to the U K and arrived at Haslar on March 3

Past History —There were entries on his M H S for bronchopneumonia in September, 1925 bronchitis in June, 1931 and influenza in March, 1933 Otherwise no illness of importance until the present illness

Condition on Admission to Haslar on March 3 —Temperature 99·6° F pulse 92 Tongue coated Throat injected Teeth septic

Heart Cardiac dullness not enlarged Apex beat 5th space in left nipple line Heart sounds healthy

Lungs Signs of emphysema and bronchitis were generalized throughout the chest

Abdomen Soft Liver and spleen not felt There were many dilated venules around the costal margin

Pupils equal and react to light Fundi normal

Blood pressure 130 systolic, 70 diastolic

The sputum was free and contained a considerable quantity of blood at times , examinations in the laboratory showed no organisms except cocci and diphtheroids

Complete blood count on April 3, 1934 White cells 10 600 red cells 4 950 000 hæmoglobin 85 per cent colour index 0 87

Differential count Polymorphs 75 00 per cent small lymphocytes 18 00 per cent large mononuclears 5 50 per cent eosinophils 0 50 per cent

X ray of the chest on April 13 —

Whole of right lung and lower and middle zones of left lung are opaque to *x*-rays

On exploration on right chest on April 13, only a few minims of blood were withdrawn from the right lung

Wassermann negative on May 9

On these findings an intrathoracic new growth of the right side of chest was diagnosed

Progress —For the first few weeks hæmoptysis occurred more on some days than on others and dyspnœa continued, with pain in the right chest which was now somewhat dull on percussion There was increased vocal resonance and harsh breathing in the upper two or three spaces

The sputum varied in extent but on the whole increased after the severer hæmoptyses Frequent radiological examinations demonstrated that the opacity on the left side and in the lower part of the right side cleared rapidly, while the right upper portion remained a dense shadow

By April the air entry was poor in upper two or three spaces in the front on the right side, and by the end of the month the neck was noted to be swollen for the first time Very soon after this enlarged glands were felt in the neck and difficulty in swallowing began to be noted

Hæmoptyses, at this time became larger and more frequent and the patient's general condition became so bad that at 9 30 p m on May 4 he was not expected to live through the night, the pulse being very weak and rapid but he rallied after being given morphia gr ¼ and strophanthin gr $\frac{1}{100}$

After a few days the swallowing improved and as the hæmoptysis had ceased down, the general condition by the beginning of June showed improvement

In spite of the negative Wassermann N A B was given, guarded by Amotex (0 75 grm) and starting with very small doses (0 1 grm)

This course was started on June 8 but as it was without effect on the general condition was stopped on July 23 During this period the *x* ray reports became less favourable on June 18 and July 5, reports showing an increase in the size and density of the shadow in the right chest

In view of the slow progress of the lesion it was decided to try to obtain a course of deep *x* ray or radium therapy Through the kindness of Surgeon Commander Irvine, R N V R. and Mr Cecil Rowntree, a vacancy was obtained in the Consr Hospital Fulham Road London, and the patient was discharged to this hospital after being invalided on July 27

After Progress —This patient was again seen in November, 1934, on which day he walked up to the hospital. He had made considerable progress since his discharge from the naval hospital though he was still somewhat dyspnoic and his pulse was rapid (120 on arrival) He stated that he enjoyed his food and wore his normal sized collar again He was due to have a further course of deep *x* ray therapy in December 1934

He is still well at the time of writing. February 2 1935, and is having a further course of deep *x* ray therapy at the Fulham Hospital

Comment —The main points of interest in this case are (*a*) The classical history and mode of onset of presumably bronchial carcinoma is well demonstrated in this case Early signs were bronchitis and asthma, followed rapidly by recurrent hæmoptysis Dyspnœa especially on exertion was also an early symptom

(*b*) It is remarkable how this patient rallied while he was in hospital For several nights it seemed impossible that he could live through the night, and at one period liquid food could scarcely be swallowed, yet three weeks later soft foods were again being taken with relative ease

(*c*) The immediate reaction to deep *x* ray therapy was excellent, better than had been hoped for, and an existence which, otherwise could only have been a miserable one had been converted into an almost normal one for a time,

Case 2 —J N , aged 39

History —This patient had a succession of colds all through the winter and on April 19 1934, developed a severe pain in the right side of his chest. He reported sick with this and was discharged to hospital, April 23

Past History —M H S showed no relevant points

Condition on Admission —Temperature 101, pulse 92 respiration 26 Tongue coated Throat red Teeth good

Heart Apex beat in 5th space 1 in external to left nipple line Heart sounds healthy

Lungs There was a dullness on percussion over the lower part of the right chest front and back Movement was poor at both bases There was a friction rub in the right axilla in the front part and rhonchi and crepitations all over the right upper lobe At the back at the apex of the right lower lobe, there was bronchial breathing bronchophony and consonating crepitations

Abdomen Soft Moves freely. Liver palpable when he coughs only

Laboratory Investigations —Urine 1014 Acid No albumin or sugar

Sputum No T B found, cocci only present Sputum prune juice in colour No amœbæ seen

Blood count on May 31 White cells 9 400 red cells [illegible] haemoglobin 90 ; colour index 0 9

Differential count Polymorphs 76 5 per cent ; small lymphocytes 18 5 per cent large mononuclears 4 5 per cent eosinophils 0 5 per cent

No abnormal red cells seen

X ray of chest on May 22 There was a uniform opacity in region of right upper interlobar line which suggested interlobar effusion

Progress —After admission the fever subsided on the fourth day but the prune juice sputum continued for a fortnight As soon as he started to get up (about May 10) his temperature began to rise again to about 100° F at night, and there was some tachycardia.

This fever tended to increase till, about June 1, it reached 101° F at night (pulse 90 to 120) At this period there was dullness at the upper three spaces of the right side of the chest in front, and absent or faint breath sounds over the dull area Behind, at the right apex, there was relative dullness bronchial breathing and bronchophony A further *x* ray examination showed increase in the size of the opacity.

The chest was explored on June 6 In 3rd right space in front, just above right nipple blood only was obtained Emetine ½ gr was given daily for a few days without any effect on the temperature or general condition

About June 11 he began to spit up purulent sputum and this continued, mixed with blood at times till about June 26 The temperature fell to normal by June 19. *X* ray at this period showed a further increase in the size of the shadow this, however, was somewhat discountenanced by the clinical improvement He now began to get up again; the temperature remained down and the pulse rate was between 80 and 90

On July 5, *x* ray showed that the opacity had diminished considerably, and there were areas of translucency in it

He was discharged to twenty eight days sick leave on July 16, and recommended for further *x* ray examination at expiration of his leave At this time there was diminished air entry and vocal resonance at the right apex, with an impaired note on percussion

The picture suggested by the symptoms and signs so far suggested an unresolved pneumonia on the right side with a subsequent interlobar empyema, which burst into a bronchus and emptied itself in this way

Second Admission —A further *x* ray examination was carried out on August 24

Report "Thickening in interlobar area the same Cavity formation now present with a fluid level.

On August 26 he reported sick with a cold, discomfort in his right chest and stabbing pains behind the right shoulder At this time the physical signs in front were the same as when he was examined before his discharge on leave On August 30 he coughed up a large test tube full of sputum which separated into three layers frothy, rusty and more purulent Now there was a light cloud of albumen in the urine Blood count normal

Lipiodol X ray Carried out on September 10 —Report "Most of the lipiodol is in the lower lobe, which appears normal no dye has entered the cavity and there appears to be a blocked bronchus to the upper lobe

Condition now was considered to be an abscess of the lung in region of the right upper lobe probably sequela of encysted interlobar empyema He was discharged to duty and fourteen days sick leave on September 21

The chest condition appeared slightly better on examination than previously, but just prior to discharge he had noted a small gland near the left angle of the jaw, which was a new arrival on the scene. This was thought to be probably secondary to some undiscovered septic focus

Third Admission —On November 19 he was again admitted to hospital with

swelling of the neck and cough The swelling was most marked in the left cervical region and had he stated, been coming up gradually the past few weeks He had also coughed up some dark stale blood and seven days before admission he developed a sore throat, which made swallowing painful

CONDITION ON ADMISSION —Tongue dry and coated Teeth good

Throat Fauces and uvula intensely congested and covered with white exudate in patches Neck much swollen and face puffy especially under the eyes There is a large gland near the left angle of the jaw and a smaller one in the right supraclavicular region Trachea central

Heart Apex beat in the fifth space one finger-breadth internal to left nipple line

Lungs Front —Dull over upper four spaces on the right side breath sounds harsh, and a serious friction rub heard in upper part of chest In the left lung and lower part of right lung the breath sounds were normal Back There was dullness on the right to below the spine of scapula and, on auscultation, a coarse friction rub and increased vocal resonance were heard At right base bubbling crepitations were noted On the left side the breath sounds were normal

Abdomen Appeared normal, liver and spleen not felt

The face, both arms and the trunk, down to the lower end of the sternum cartilage were a dusky bluish colour while the rest of the body was a snowy white There were enlarged venules over the chest especially in the bluish area

The urine still contained a trace of albumin Laryngoscopic examination showed gross congestion of the larynx and paralysis of the left recurrent laryngeal nerve

X ray examination Report— Right diaphragm shows normal movement, but is slightly drawn up heart drawn slightly to the right and a dense hilar mass extends into the middle and upper zones on the right side which strongly suggests neoplasm

The state of affairs was now obvious There was a new growth of the right lung causing a partial block of the superior vena cava

Œdema of both arms supervened and became rapidly worse, and he developed some dyspnœa especially at night

Mr Rowntree again very kindly found a vacancy for this patient in the Cancer Hospital He was discharged there on November 30 with a view to deep x ray therapy Unfortunately he was too late to receive much benefit and though he had a considerable amount of treatment he died December 27, 1934

EXTRACT OF POST MORTEM REPORT —Carcinoma of right lung with metastases in submaxillary lymph gland, liver adrenals and lesser omentum

COMMENT —This patient presented an interesting problem Was the carcinoma present in the lungs before he was admitted in April, 1934 and did the presence of the new growth determine the attack of pneumonia which was followed by an interlobar empyema and later by an abscess in the lung sequelæ which for a time masked the underlying condition or, on the other hand, did the pneumonia and sequelæ prepare the ground for the development of a new growth in the lungs?

The former hypothesis appears to me to be the more likely, in view of the appearance of a gland near the left angle of the jaw in September

The occurrence of infection of this gland is not uncommon if the supra clavicular glands of the opposite side are infected with new growth, as there is a considerable decussation of the lymphatics in the neck which connects these two groups of glands

Readers are referred to a third case, 'A Case of Bronchial Carcinoma with Secondary Deposits in Brain and Liver,' which was published by Surgeon Commander Gibson in the April 1935, issue of this Journal for he makes the following comment on the three cases —

COMMENT —These three cases form an interesting small series which shows the diversity of the initial signs or symptoms in these cases

Dr Maurice Davidson of the Brompton Hospital in a [illegible] describes five varieties of onset in cases of intrathoracic new growth

(1) Hæmoptysis —First sign in a man aged 40 to 50

(2) Vague general symptoms with dyspnœa and bronchitis, the former being out of proportion to the physical signs.

(3) Pleurisy —First sign in a man aged 40 to 50 this may be either dry or with effusion, and if the effusion is blood stained the condition is almost pathognomonic

(4) Dyspnœa Cough and Pain (not very marked) with gross physical signs, the most important of which is dullness in one side of the chest In these cases the disease is advanced

(5) Secondary Deposits in C N S —Hemiplegia may be the first sign of the disease

The three patients under consideration illustrate four of these types

Case 1 illustrated both the first and second group

Case 3 may be considered to fall into the third group, although perhaps he should form a sixth type starting as a pneumonia

Case 3 illustrates the fifth type of case, the first symptom being one of an affection of the pituitary gland I have never seen recorded an intrathoracic new growth giving its first manifestation in this way

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TWO CASES OF ADVANCED TUBERCULOSIS OF THE GENITO URINARY TRACT

By Surgeon Commander J COLBORNE R N

The textbooks state that tuberculosis of the kidney is followed sooner or later by tuberculosis of the other side this is not always so and this case demonstrates a condition of the opposite kidney which is almost as serious

Case 1 —W R G C, aged 32

This patient was admitted to hospital in August 1934

Previous History —Gonorrhœa in 1928 Frequency of micturition and prostatitis in 1931 He was in hospital for three weeks there was no evidence of venereal infection, he recovered with local and symptomatic treatment and was discharged, and had no further symptoms until six months before admission

Present History —Frequency of micturition by day and night with pain on passing water and some loss of weight The urine was occasionally blood stained His general health was very fair The external genitals were normal and the kidneys not palpable

Cystoscopy —The bladder capacity was greatly diminished The mucous acutely inflamed and showed œdema and hæmorrhages

Tubercle bacilli were present in the urine but were very scanty and it is presumed that they came from the bladder only

X rays by Excretion Urography (fig 1)

Right Side There are several small opacities suggesting calcification in the right renal area, no dye seen after one and a half hours

Left Side A marked degree of hydronephrosis and hydro ureter

The suggested pathology is On the right side a tuberculous pyonephrosis or caseous kidney The ureter has been occluded the secreting substance destroyed and replaced by caseous material which has undergone commencing calcification This can be seen in the x ray plate and is marked by an arrow On this side the disease has become quiescent or is possibly arrested

The bladder, which was injected from this kidney, showed advanced tuberculosis In this condition the bladder wall becomes thickened, inelastic and its capacity greatly diminished, and the hydronephrotic condition of the left kidney and ureter is directly due to back pressure from the chronically contracted bladder

It is doubtful if removal of the right kidney would be of any practical use—the only operative procedure likely to alleviate the constant strangury is presacral neurectomy By doing this the sympathetic fibres to the bladder are cut in the hope that the bladder will become flaccid and dilated and relieve the pressure on the remaining functioning kidney



Fig 1

The patient's history and present findings suggest that he had tuberculosis of the urinary tract in 1931 and emphasizes the importance of examining the urine for tubercle bacilli when there is frequency of micturition—whether the patient has a venereal history or not

Case 2 —The association of manifest tuberculosis of the testicle and latent tuberculosis of the kidney of the same side

H E C, aged 34

This patient was admitted in April, 1935, with tuberculous disease of the left testicle

Previous History —The right testicle was removed for tuberculous disease in December, 1927 The patient remained quite well until two months before admission when the left testicle became swollen

Present Condition.—Advanced tuberculous epididymitis on the left side The left side of the prostate was slightly nodular There were no urinary symptoms and there never had been any

X Rays by Excretion Urography (fig 2).—The right renal area showed a horseshoe-shaped area of irregular density suggesting calcification in a caseous kidney no dye was seen up to one and a half hours Kidney considered to be functionless The left side shows a normal pyelogram

Cystoscopy.—The bladder was normal except that the right ureteric orifice was not located.

Conclusions.—Tuberculous pyonephrosis of long standing with occlusion of the ureter on the right side The bladder is unaffected and the left kidney normal



Fig 2

The patient undoubtedly had a tuberculous kidney on the right side associated with the right testicle

He had no urinary symptoms, the testicle was removed and no further investigations were made The association of tuberculous disease of the kidney and testicle on the same side is so common that the renal condition should be fully investigated whether there are urinary symptoms or not

A CASE OF ACUTE UNILATERAL RETROBULBAR NEURITIS

By Surgeon Commander A A Tomkett MB Cantab D Ophth

These cases although relatively common in the practice of an ophthalmic hospital, are infrequent in the Service and this case in question showed some interesting points in diagnosis and prognosis of the condition

Mr X, a young man, aged 20 whilst on leave was referred to me by his

rivilian practitioner, to whom he had gone, complaining of a film over the right eye of sudden onset When I first saw him the symptom had been of one week s duration, which he had first noticed one morning on rising This film or mistiness was the only complaint, there was no pain or headache nor had he had anything similar previously He had never worn glasses

His previous medical and family history showed nothing relevant

Examination Both eyes quiet

Right pupil contracted to point light two or three seconds later there was some hippus and the pupil slowly dilated and remained so

Left pupil contracted normally to point light

Both reacted to accommodation and consensually

External ocular movements were full and painless, no nystagmus

Tension normal each eye

R V $\frac{6}{9}$ (I) Hm + 0 25 not improved, with stenopeic aperture the same, also J1 at 20 cm

L V $\frac{6}{9}$ Hm + 0 25 = $\frac{6}{6}$ and J1 at 30 cm

Muscle balance normal to distance and near Peripheral fields to a white and blue test object of 5 mm were full The right central field on a Bjerrum s screen to a 10 mm white and blue test object showed a small paracentral scotoma in the inferior nasal quadrant, the scotoma to white being smaller and closely approximating but not including the fixation spot The blind spot was normal left central field was normal

Refraction under homatropine showed a little astigmatism with the rule, but correction did not improve his vision Fundus examination There was some pallor of the temporal side of the right disc the so called papillo macular bundle pallor, as contrasted with the left, which was normal The patient was admitted to R N Hospital, Haslar, for further investigation The following is a list of the more important differential diagnoses which had to be considered —

(*a*) Local causes (1) Orbital periostitis (2) para nasal sinusitis including the sphenoidal sinus, (3) fracture of orbit or anterior base of skull (4) a pituitary enlargement pressing on or stretching the right optic nerve (5) Leber s disease

(*b*) General causes (1) Focal infection, usually attributed to teeth tonsils or intestine (2) rheumatism (3) common colds or catarrhal infections (4) diabetes (5) insular sclerosis

Full investigations by the Radiological Laboratory E N T and Medical Departments failed to elicit anything which could be labelled as an existing cause This is practically always the rule in these cases, and one was left with the differential diagnosis of Leber s disease (hereditary optic atrophy) and insular sclerosis The points against the former were the fact that the loss of vision was very slight the recovery as it turned out was good, and the family history was negative In favour of insular sclerosis is the fact that quick and good progress occurred and the clinical evidence that quite a fair proportion of established cases have had unilateral retrobulbar neuritis years before

In the case almost complete recovery of vision and fields took place in three weeks, and experience proves that full recovery might be anticipated There is little in the way of treatment unless one finds a cause some authorities postulate complete rest of the ciliary muscles with atropine and tinted glasses to reduce glare, the latter are usually sufficient as great inconvenience results from atropine and the indications for its use do not appear to overcome the disadvantages

The patient was discharged to duty and for observation from time to time

Reviews.

THE MEDICAL [illegible] GENERAL INDEX AND REVIEW [illegible] Bristol John Wright and Sons Ltd London Simpkin Marshall Ltd

The *Medical Annual General Index and Review* (1920-34) is a digest covering the last ten years of all those advances in medicine and surgery which have been recorded from year to year in that valuable volume, the *Medical Annual*.

There are thirty chapters covering various groups of medical and surgical specialities or subjects, and each chapter is sponsored by a sectional editor who is a well-known expert in the sphere under review.

A copious index of 200 pages affords references to the *Medical Annual* where further information may be obtained on the various subjects.

This is a difficult book to review, but it can be said as a general opinion that the volume gives a succinct account of all those advances in diagnosis and treatment which have occurred in the last ten years. It would be invidious to select any one chapter as better than the others for when covering such an extensive ground as the whole of medicine and surgery the mind would be prejudiced into selecting those subjects which make a special appeal.

Under "Abdominal Surgery" (C. Rundle Short) an account is given of the abdominal incisions which are most suitable for approach to various viscera and in this chapter too, we learn that the deaths from appendicitis in the U.S.A. is 15 per 100,000 and only 7 per 100,000 in this country. Since delay in operation is the chief factor in the death rate, it looks as if this rate was dependent on the density of population in that the denser the population the less delay in operation.

The chapter on Anæsthetics (J. Blomfield) gives a satisfactory review of the anæsthetics and narcotics which have come to light during the decade. It is interesting to note that the use of spinal anæsthesia has received a stimulus from the invention of percaine.

The chapter on Blood Diseases (L. S. P. Davidson) gives a *résumé* of the unparalled advances made in the differentiation of blood conditions. The old division into chlorosis and pernicious anæmia as the only chief blood diseases has faded before a multiplicity of new diseases, but the balance as between pathology and therapy has been more than held by the discovery of liver therapy and the massive use of iron. And so on through all the chapters. New methods of investigation advancing the art of diagnosis and if at times this seems to result in new diseases the front is maintained by advances in treatment too.

This book, at the cost of 12s. 6d., can relieve any medical practitioner from the reproach of being "out of date."

THE MEDICAL ANNUAL. A YEARBOOK OF TREATMENT AND PRACTITIONER'S INDEX. Edited by H. Letheby Tidy, M.A., M.D., F.R.C.P., and A. Rendle Short, M.D., B.S., B.Sc., F.R.C.S. Fifty-third year. Bristol: John Wright and Sons Ltd. London: Simpkin Marshall, Ltd. 1935. Pp. 549, illustrated. Price 20s. net.

It is always a pleasure to welcome and correspondingly difficult to review such an old friend as the *Medical Annual*, the fifty-third consecutive issue of which has now been published.

The *Medical Annual* is so well known that it will suffice to say that the present number worthily upholds the traditions of its predecessors. The editors, in a short introduction direct attention to those fields of work in which progress or research has been chronicled in the past year; they also announce the publication of the very useful decennial *General Index and Ten Year Review* 1925 to 1934 which adds enormously to the value of the *Medical Annual* itself.

A common criticism of this "handy annual" is that it tends to cater more for the specialist than for the general practitioner, but in the present edition the editors seem to have balanced the scales fairly evenly. As usual the main portion of the book consists of the Dictionary of Practical Medicine to which thirty-three eminent authorities have contributed articles upon subjects in which they have a special interest.

In the realm of surgery, Professor E. W. Hey Groves and Mr. Pridie collaborate in presenting recent advances in orthopædic surgery and successfully summarize the principles and methods of Lorenz Böhler, of the accident hospital in Vienna, in the treatment of fractures. Those of us who may have to cope with the increasing menace of the blue jacket motor cycle complex may be grateful for this article.

Mr. Hamilton Bailey is responsible for some excellent articles on genito-urinary surgery and contrives to enliven his subject with a short but amusing article on the manufacture of onuches and their role in ancient history.

Mr. Tudor Edwards discusses the surgical treatment of bronchiectasis by pulmonary lobectomy, his article being illustrated by bronchograms and by beautifully coloured plates reproduced from the *British Journal of Surgery*.

It is practically impossible to single out for special mention any particular article on general medicine, but it will suffice to mention that this vast subject is dealt with by some of the foremost physicians in the kingdom.

For example, Sir Leonard Rogers is responsible for the yearly review of progress in Tropical Diseases and Dr. John D. Rolleston for that in the acute infectious fevers.

This part of the volume is illustrated by sixty-three excellent plain and coloured plates which deserve especial praise, as well as by numerous text illustrations.

The second part of the book consists of The Practitioner's Index, which contains a mass of useful information including short descriptions of new drugs and medical and surgical appliances, and a catalogue of new books published during 1934. This is followed by directories of medical institutions, homes, spas, sanatoria, &c., and a comprehensive list of Medical Societies.

The Annual is exceptionally well indexed and represents extraordinary value for money. The editors must be congratulated on the maintenance of the high standard which one has come to expect of the *Medical Annual*.

Reports on Chronic Rheumatic Diseases, being the Annual Report of the British Committee on Chronic Rheumatic Diseases appointed by the Royal College of Physicians. No. I. Edited by G. W. Beckley, M.D., F.R.C.P. 1935. London: H. K. Lewis and Co., Ltd. Pp. 173 + x, 8 plates. Price 12s. 6d. net.

This volume is the outcome of the first year's work of the British Committee on Chronic Rheumatic Diseases, which was appointed by the Royal College of Physicians in March, 1934. The terms of reference of this Committee were to stimulate professional interest in and to promote and encourage investigations on the chronic rheumatic diseases with especial reference to rheumatoid arthritis and also to co-operate with the International League against Rheumatism and report on current British work for the *Acta Rheumatologica*.

The Chairman of the Committee, Sir Humphry Rolleston, Bart., contributes a foreword in which he stresses the importance of the subject and the necessity for intensive research in regard to the chronic rheumatic diseases. He reviews the vexed question of ætiology, especially in regard to the rôles of infection, disordered metabolism, endocrine factors and dietetic influences.

Dr. W. S. C. Copeman succinctly describes in a few pages the origin, the constitution, and the work of the Committee up to the present time.

One of the first cares of the Committee was to appoint a Nomenclature Sub Committee to investigate the possibility of preparing a standard nomenclature and a rational classification of the rheumatic diseases as far as the present state of our knowledge permits This sub committee has presented a very valuable report suggesting a provisional grouping of the so called rheumatic diseases The chronic arthritis group is divided into two types, the *rheumatoid* (" atrophic proliferative ") and the *osteo arthritis* (" hypertrophic degenerative ") and each of these types is subdivided according as to whether the aetiology is known or unknown The pathological criteria of these types are fully and carefully described and the macro and microscopical changes in affected joints are demonstrated in well-produced plates.

The CLINICAL CRITERIA of the two main divisions of the chronic rheumatic diseases have not yet been considered by the Committee but have been tabulated for each group as a basis for discussion This report should do much to raise the nomenclature of the chronic rheumatic diseases from its present state of confusion

One of the most interesting contributions to this volume is the paper of Dr John Freeman on the position of allergy and hypersensitiveness to chronic rheumatism and arthritis He takes a broad view of the whole question and his rich experience enables him trenchantly to criticize the loose thinking and muddled writing so prevalent on this subject and to explain it to the non expert, whose ideas on the subject of an allergic patient are in the author's words, " Oh ! asthma, urticaria hay fever and all that "

Recent biochemical investigations in these diseases are well summarized by Mr Joseph Race F I C but it must be confessed that intensive research into the suspension stability of the red cells, the colour of the blood plasma, the content of sulphur compounds in the nails and in the blood, the calcium and magnesium content of the serum, the different blood groups, the basal metabolic rate, and the composition of the urine have yielded only meagre and uncertain results

One of the few papers dealing with treatment is that entitled " The Place of Histamine in the Treatment of Chronic Rheumatism, by Dr Copeman, in which from his own experience, the author describes the indications for this method of treatment and the general and detailed technique of administration

Among other original articles Sir W H Willcox contributes a short paper on " Focal Sepsis, and Dr C W Buckley of Buxton, on ' Ankylosing Spondylitis '

A comprehensive list of the literature of the year is given of which British (including Irish) publications form an almost insignificant percentage—at least quantitatively—the great bulk emanating from the United States of America from France and from Germany

It is pleasant however, to note that an article from our own Journal finds a place in this world wide collection of important literature [1]

REFERENCE

[1] "Three Cases of Gonorrhœal Arthritis Treated by Intravenous Animal Charcoal" Surgeon Lieutenant Commander L R Bexley R N JOURNAL OF THE ROYAL NAVAL MEDICAL SERVICE 1938 xxi, 52

THE OSTEOPATHIC LESION By George Macdonald, M B Ch B Edin D O (Kirksville, U S A) and W Hargreave Wilson D O (Kirksville U S A) First Edition London William Heinemann (Medical Books) Ltd Pp 141 + xii Price 7s 6d net

The authors pay honourable tribute to A Taylor Still, who first enunciated the osteopathic concept in 1873, and then proceed to elucidate the osteopathic philosophy of ill health in all its purity, stripped from the jargon of ill educated

osteopathic imitators and parasitic charlatans The object is to educate the medical profession as to what osteopathy really is and what it stands for and the authors have wisely refrained from quoting any but medical authorities They limit themselves to the etiology and pathology of osteopathic lesions at the level of the 5th and 6th dorsal segments realizing that a knowledge of these important levels will make comprehension of similar lesions elsewhere a comparatively simple affair

The first two chapters on the anatomy and physiology of the spine are modern in outlook erudite in a high degree and most readable Chapter III defines the osteopathic lesion Fundamentally they tell us that the lesion is a joint one, but that it includes all the tissues about the joint the two vertebræ, and the intervertebral disc, and in addition ligamentous connections, the connective tissues and fascia, the deep and superficial muscles in the area concerned, and most important of all the lymph channels, vessels, nerves and their cells, about these vertebræ The essential lesion is an acute or chronic joint strain, inclusive of the surrounding tissues, and including the pathological significance of such a strain

The moment that definite pathology other than that of strain develops, the lesion is no longer essentially osteopathic They admit the difficulty of defining joint strain but point out that in its essence it is a matter of tension When adhesions form the strain becomes a chronic lesion The limitation of movement varies in degree and is always within the normal limits of movement of the joint It never amounts to a dislocation All the tissues about such an injured joint are included in the lesion—contracted or overstretched blood vessels, nerves and their nerve cells The joint structure is altered in degree and there is some lack of normal movement

X rays, they tells us are of little use in the diagnosis of an osteopathic lesion pure and simple

The secondary osteopathic lesion is produced reflexly, e g in a viscus or in any tissue distal to the spine It is in fact the lesion that Sir James Mackenzie taught us Further thermal or mental conditions may set up these reflex conditions. They depend on the activity of the viscero somatic reflex If such tension in the the affected spinal joint is active for long it can persist after the primary visceral irritative lesion has been removed Then says the osteopath, "you have a possible active or objective lesion having a definite effect on the activity of the viscus,' at the level in question—in this case the stomach Finally an active primary osteopathic lesion can have its activity considerably increased by secondary factors, thermal, mental or reflex, or a combination of these Such a lesion having become inactive can be lit up again by one or all of these factors

At this point the authors lay great stress on the sometimes visceral reflex They tell us that an osteopathic lesion at the level of the 5th and 6th dorsal vertebræ can affect a viscus directly by pressure on a splanchnic nerve, or as a result of biochemical changes in the tissues around the osteopathic lesion, e g the formation of lactic acid and other products of metabolism thrown out by the muscles in tension but they are strongly inclined to think that the chief effects of the lesion are produced reflexly by a stimulus arising in sensory end organs in the joints muscles ligaments and surrounding tissues involved in the condition of joint strain They descent on viscero motor reflexes viscero secretory reflexes and viscero trophic reflexes (these are well known to us all), but here we have a somatic visceral reflex working in the reverse direction At this point one instinctively challenges their evidence For they make this reversible reflex the foundation of most that follows They quote the example of the ciliospinal reflex When the cervical sympathetic is intact pupillary dilatation occurs if the skin of the neck is pinched They say that sensory nerve endings abound in all the tissues of such a lesion especially those of the sense of pressure These impulses do not reach consciousness, and, they proceed, "it is easy to imagine

how by a process [illegible] irritation and facilitation a reflex arc is established in the cord, and a stimulus spreads to the sympathetic system to manifest itself in a vegetative structure. They quote Dixon to show that the blood flowing through an intestinal viscus can be altered reflexly through stimulation of the somatic nerves in reflex continuity with the viscus. They quote experiments of Freude and Rubinstein on the effect of localized cutaneous stimulation (thermal, chemical and mechanical) on the musculature of the stomach. They tell us that Mackenzie himself would have been osteopathic if only he had admitted that the lesion inducing the irritable focus in the cord could arise not only from "a neighbouring organ whose reflex centre in the spinal cord is in close proximity to that of the stomach, but from an acute osteopathic lesion of the 5th and 6th dorsal vertebræ." He failed to do so they tell us, because he was obsessed by the idea that reflex irritation must arise in a viscus ignoring lesions of the skeletal structures as a possible primary underlying cause. Finally mark this statement, "The path of the osteopathic somatico visceral reflex is possibly the same as that postulated by Mackenzie but of course functions in a reverse direction. That this can happen is firmly believed by the osteopathic profession, but stoutly denied by the medical profession in general. Should the osteopaths be correct in this assumption it is only a step of course to the acceptance of the far reaching effects that an osteopathic lesion at any level of the cord can have on the functioning and blood supply of any visceral structure.

The effects of the lesion are fourfold. (1) Localized pressure effects. (2) peripheral effects due to tension. (3) effects on a viscus. (4) general effects, direct or reflex, on the nervous circulatory or glandular systems other than those in a viscus, and treatment is directed to the combating of these four effects. There are four chapters concerning such matters.

Then comes a discourse on manipulation. Previous to studying osteopathy, says our author, one of us had a Medical training, and there were many times during his studentship in America when grave doubts of the whole proceeding assailed him. One remembers well the certainty with which experienced osteopaths, apparently unassisted by their patients diagnosed tender areas in the spine, and picked out what proved by treatment to be the salient lesions in any particular case. One remembers being astounded by the claims of these same osteopaths that they could distinguish whether the lesion of a muscle or joint was toxic or traumatic. After many years of experience things began to unfold themselves gradually.

It is in the early lesions that one gets the best results. Several treatments are needed, because of the tendency of a joint in lesion to fall back into a state of lesion. Osteopaths are frequently designated manipulative surgeons. It would be more accurate we are told to describe them as manipulative physicians, dealing with a definite aetiological factor or clinical entity. Several types of manipulation are described and radiant heat is used as an adjunct to obtain relaxation.

They conclude that an osteopathic lesion is a universal aetiological factor and is capable of playing a part although admittedly in many cases a small one in practically any breakdown of normal functioning hence its appeal to empiricism or charlatanry. Medical men should be fully cognizant of the possibilities of the osteopathic factor both in aetiology and in treatment. They claim relief for thousands by osteopathic treatment a relief hitherto denied them. The other aetiological factors have all to be considered in conjunction with the osteopathic one which is very important in fibrositis neuralgia and sciatica. The only efficient treatment of an osteopathic lesion is manipulation. Such lesions must be looked for and treated just as universally as septic foci just as enthusiastically as errors in diet are hunted down and eradicated just in fact as any other aetiological factor is relentlessly treated in modern medicine.

That this well published volume is highly engrossing no reader will deny Moreover it fulfils its purpose in defining the osteopathic outlook to medical men But one may well be pardoned if, in the absence of the authors long and revealing experiences so painfully gathered one feels a little sceptical as to the presence of these osteopathic lesions with their strains and tensions, and if in the case of the reflex lesions Sir James Mackenzie did not go precisely as far as the scientific evidence entitled him to go That a case is made out for the reversible somatico visceral reflex is just conceivable but in the present state of our knowledge, to found a far reaching indeed all pervading, system of medicine upon it ranging from the treatment of a septic focus in any region of the body, to metabolic and biochemical upsets and visceral dysfunctioning and distortion, is a phenomenon that requires all the authors imagination to envisage it and all their enthusiasm to expound it in the illuminating manner of this volume

THE THEORY AND PRACTICE OF ANÆSTHESIA By M D Nesworthy, M A, M D, B Ch Cantab , Anæsthetist to Westminster Hospital Anæsthetist to Grosvenor Hospital for Women , late Senior Resident Anæsthetist St Thomas's Hospital with a foreword by I W Magill M B, B Ch Belfast, Senior Anæsthetist to Westminster Hospital Anæsthetist to Brompton Hospital for Consumption and Diseases of the Chest First Edition 1935 Hutchinson's Scientific and Technical Publications 32 36 Paternoster Row London, E C 4 Pp 223, 35 illustrations Price 12s 6d

The all embracing title of this book does not fairly describe either its scope or its object It is far more concerned with the difficulties that may arise during the administration of an anæsthetic than with the technique of that administration, so much so that accounts of methods of inducing and maintaining anæsthesia are of the briefest, and descriptions of apparatus are nearly non existent There are not serious faults, mere attempts to describe details of such technique nearly always fail Spinal methods are described in some detail but no reference is made to regional and local infiltration anæsthesia.

It is in dealing with the physiology of respiration and of the circulation, and with the action of them of the various drugs used for the production of anæsthesia that the book justifies itself The mechanism of respiration is briefly and adequately described, and the chemistry of acidosis, with its effect upon respiratory and circulatory centres, discussed

The actions on the vital centres of each of the common anæsthetic drugs are described in detail, and the many difficulties that may arise, the reasons for their arising, and the means of overcoming them are clearly laid down a proper emphasis being laid on the necessity of sufficient depth being maintained if complete control of the patient is to be effected The value of the use, to its proper place of carbon dioxide is brought out again and again, and the help given to anæsthetist and patient and consequently, to the surgeon by the judicious use of suitable premedication stressed Intravenous methods are discussed, and the author rightly advocates this in preference to the oral route for the administration of nembutal, because of the more accurate control of the dose that it renders possible

The chapter on endotracheal anæsthesia is not so well done pages 135 and 136 in particular, dealing with the relative merits of insufflation and tubulation methods being very confusing and should be re written for a later edition Spinal anæsthesia is dealt with briefly but very clearly and well the technique with alkaline and with percaine being described in detail Too many of the illustrations are photographs of apparatus such photographs are of no assistance to the understanding of the often complicated machines used, simple diagrammatic sketches would be very much more useful and no costlier to produce The type is large and clear, and the book interesting and easy to read It concentrates largely

on the management of patients under the influence of general anæsthesia and on the difficulties and untoward events which may interrupt the smooth progress of that anæsthesia, and deals but lightly with purely technical details which are only to be learned in practice

This is a most useful book, and one that we have no hesitation in recommending to those who are about to take up an appointment in anæsthetics for the first, or a later, time

INSOMNIA AND OTHER DISTURBANCES OF SLEEP By Emanuel Miller, M A Cantab, M R C S, L R C P D P M Cantab London John Bale, Sons and Danielsson Ltd 1935 Price 2s 6d net

This book gives a certain amount of information about sleep and its disorders Characteristic sleep disturbances are well discussed and the modern pharmacological and psychotherapeutic treatment of these conditions are dealt with briefly

The presentation of the book however, is not to be commended Sentences are bulky and poorly constructed and the style is somewhat wanting in lucidity

CHRONIC NASAL SINUSITIS AND ITS RELATION TO MENTAL DISORDER By F A Pickworth, B.Sc, M B, B S, A I C (Exam) Director Joint Board of Research for Mental Disease, City and University of Birmingham First Edition 1935 London H K Lewis and Co Ltd Pp 156, with 83 illustrations (7 in three colour 4 in two-colour) Price 15s net

The author of this book has clearly demonstrated the widespread existence of pathological processes occurring in the nasal accessory sinuses, and how, by their relation to vascular and nervous structures and the mechanisms by which local and general distribution of toxins and micro organisms can occur, chronic disease of the brain accompanied by symptoms of mental disorder results

In giving a practical clinico pathological picture of mental disorder based upon inflammatory changes of the cerebral capillaries, the author expresses the hope that in future the clinician will attempt to correlate symptoms of mental disorder with disturbed vascularity of the brain, and that the pathologist will associate his findings with their possible effect upon the state of the capillaries of the brain

In associating chronic sepsis with abnormal behaviour, the chief difficulty has been to discover an intermediate stage for the correlation of such a divergent problem which is understood by both the clinician and the pathologist but if as the author suggests we accept vascular disturbances of the brain resulting from chronic sepsis as this intermediate stage, our comprehension of the problem of chronic sepsis in relation to mental disorder is greatly facilitated

The book is divided into eight chapters and is excellently produced A good deal of space is devoted to the exposition of the relationships of cranial pathology found in relation to mental disorder to vascular abnormalities of brain tissue The chapter dealing with the remarkably close relationship which the cranial and sympathetic nerves, dura mater, pituitary gland and adjacent brain stem bear to the nasal sinuses is most interesting and enlightening When one realizes that the bony partition between the sinus and pituitary may be of paper thinness, one can readily imagine the inevitability of alteration of function and of the quality and amount of secretion of the gland when the sinus happens to be in a septic condition

The printing throughout is clear and easily read the illustrations are from original specimens, and the reproductions are from untouched photographs

Repetition occurs occasionally, but only when the necessity for emphasis arises

Although primarily intended for use in mental disorder research, we can confidently recommend this book to all who are interested in seeking up to date knowledge both in general medical as well as mental disease

MODERN TREATMENT IN GENERAL PRACTICE Volume II Edited by Cecil P G Wakeley D Sc, F R C S, F R S E Fellow of King's College London Editor of the *Medical Press and Circular* Baillière, Tindall and Cox, 7 and 8 Henrietta Street, London W C 2 Pp viii + 382, 127 figures Price 10s 6d

This book is a worthy successor of Volume I, which was published in 1934

The articles of which this volume is composed covers a wide range of subjects, this is very apparent from a brief perusal of this book For instance taking a few articles at random —

Chapter VI deals with 'The Modern Treatment of Asthma, by L S T Burrell M D Camb F R C P Lond

Chapter XVI The Treatment of Venereal Disease in the Royal Navy, by Surgeon Rear Admiral B Pickering Pick, O B E

Chapter XIX "The Abduction Treatment for Fractures of the Neck of the Femur, by Royal Whitman M D, M R C S, F A C S New York

In fact there is not a branch of medicine or surgery which does not find a place in this series of articles

The contributors have been drawn from almost every school and every part of the country

The book is a most valuable survey of modern therapeutic and diagnostic methods special stress being laid on diagnosis and treatment

The articles are very readable accurate and reliable

The value of this book is much enhanced by its excellent index

We cordially recommend it to all practitioners who have not time to take out refresher courses, but wish to keep abreast with modern methods

AN ELEMENTARY TEXTBOOK OF ANATOMY By Henry Edward Clark, C M G Entirely revised to date by John Graham B Sc M B, Ch B F R F P S Professor of Anatomy the Anderson College of Medicine Glasgow New Edition 1935 London and Glasgow Blackie and Son Ltd Pp 278 + x with 173 illustrations and an anatomical chart Price 6s net

We had not seen a previous edition of this book this rendered our examination of it more interesting to ourselves We noted the title An Elementary Text book of Anatomy, we opened the book at random and happened on pages 164 and 165 with fig 114—branches of the fifth nerve The detail in this figure did not appear to us to be so elementary, we therefore turned to the publishers' note Here it is stated that the volume 'has long been a standard work of its kind and has provided junior students of medicine nurses and others with a valuable and compact introduction to the study of anatomy' This statement threw us back to our student days, when we received our introduction to anatomy via the earthworm dogfish rabbit &c, thence into the thick of Gray's Anatomy and our dissecting volumes We can see the value of such a book as this for while there is a great deal of anatomical detail for study the book can be read through and the general anatomical make up of the body and the correlation of parts perceived, thus furnishing a ground upon which the more searching anatomical details may be built It even suggests to us that with such a book biology could be dropped from the over burdened medical curriculum for other than potential biologists, more especially could this be done if the physiology of the parts were described side by side with the anatomy in the same volume and on similar lines

The book is divided into the usual anatomical sections, histology, osteology, &c in all seven There is a glossary of anatomical terms and an index at the end The author and reviser do not pretend to complete anatomical description, yet we find, in spite of our rustiness in this subject, that what is described tells us a great deal, and also recalls to our mind many details which are not included in the text hence we find it of value for reference

The illustrations are clear and instructive in so far as they [illegible] to go the printing and type are clear and the price must reasonable

We confidently recommend the book to those for whom it is written and to all those who desire some knowledge of anatomy as a foundation upon which to build or who do not require more detail than is given in this volume We shall keep our copy

A Pocket Medical Dictionary Compiled by Lois Oakes, S R N , D N (London and Leeds), late Sister Tutor to Stanley Hospital and Browelow Hill Infirmary Sister Tutor to Walton Hospital Liverpool, Certificate of Central Midwives Board Certificate of the Royal Sanitary Institute Examiner to the General Nursing Council for England and Wales Assisted by Thos B Davie, B A M D Liverpool M R C P Lond late Pathologist Walton Hospital late Senior Lecturer in Pathology University of Liverpool Professor of Pathology, University of Bristol Second Edition 1935 Edinburgh E and S Livingstone, 16 and 17, Teviot Place Pp 366 + xx Price 3s net Postage 2d

The first edition of this volume was produced in 1933 and the production of a second edition now indicates its popularity The book is what it is described—a pocket book This we consider to be its first asset its second is the arrangement of the material, and next, we like the Table of " Diseases Designated by the Names of those who Discovered Them or First Described Them Finally the print is clear and the definitions concise yet informative We think that the majority of the illustrations could be omitted as being of no value to the completely ignorant and insufficient for those who must know the majority of subjects illustrated in more detail

The book is described as a book of reference for medical students and is compiled in three main parts The first part gives lists of abbreviations of degrees, diplomas medical terms &c tables of weights and measures and comparison of thermometric scales The second part is the Dictionary proper the author ' makes no claim to the completeness of the larger dictionaries, hence criticism of omissions is perhaps unjust but we notice that the Dick Test is omitted, yet the Schultz Charlton Reaction and the Schick Test are included—incidentally the last contains a printer s error in the third line " of " should read ' or " The final section or Appendix contains much useful and interesting information—Diseases Designated by Discoverers Names Interesting and Historical Facts Dietary Tables , Poisons and Antidotes &c

We are satisfied as to the value to be obtained from this book and congratulate the author and publishers In addition to recommending it to those for whom it was primarily written we add those to whom transport or space for stowage of books is of import

A Guide to the Surgical Papers with Questions and Answers By R J McNeill Love M C Lond F R C S Eng Surgeon Royal Northern and Metropolitan Hospitals Surgeon City of London Maternity Hospital Hunterian Professor, Royal College of Surgeons late Surgical Assistant, London Hospital First Edition 1935 London H K Lewis and Co Pp 77 Price 5s net

This is a useful little book for the candidate about to sit for a surgical examination

The author has compiled twenty eight questions on General Surgery and has so chosen them that they cannot be answered directly from a textbook The synopses of the answers occupy fifty four pages They are brief, but contain the framework on which to build a detailed reply

He has succeeded in showing the candidate how to marshal his facts and to convey to the examiner his knowledge of the subject, in an economy of words and with no unnecessary ' padding

News of the Service.

ADMIRALTY ORDERS

1478 —Eyesight Standards for Men

(N 1953/35 — 0 5.1935)

[illegible] shall be made to A F O 811/35 under the first table in the paragraph [illegible] of Navies on Duty

[illegible] Ratings (in Asdic Cabinets only)

1482 —Queen Alexandra's R N Nursing Service

(C B., 3521/3 —30 6 1935)

In accordance with the decision to reduce in full the economy cuts in salaries Admiralty Fleet Order 1691 the rates of pay for members of Queen Alexandra's Royal Naval Nursing Service will be revised as follows with effect from July 1 1935

Scale of Pay

Rank	*Minimum*	*Increment*	*Maximum*
	£ s. d	£ s. d	£ s. d
Head Sister in Chief	200 0 0 Plus allowance of £50 per annum	10 0 0	275 0 0
Head Sister	125 0 0	12 0 0	176 0 0
Superintending Sister	120 0 0	10 0 0	150 0 0
Sister	65 0 0	5 0 0 biennially	110 0 0

1520 —Form M 182 —Establishment

(Stn 1283 —20 6 1935)

The label for painting on the lid of the surgeon's general case has been established as Form M 182 and applies in future to [illegible] ships entitled from the R N Store Depot West India Docks E 14

1552 —Vision Recording of Standard of Results

(N 4746/35 —11 7 1935)

With reference to A F O 943/35 Naval Medical Examining Officers should enter in the appropriate column of Form H 216 (Continental Naval Medical Examination) the vision, both near and distant, and the grade of colour vision obtained.

1738 —Advancement to Leading Sick Berth Attendant and Sailmaker's Mate— Educational Requirements

(N 2085/35 —18 7 1935)

As from May 1 1936, all Sick Berth Attendants and Able Seamen qualifying for Sailmaker's Mate must have passed Educational Test Part I as a result of advancement to Leading Sick Berth Attendant and qualification in Sailmaker's Mate respectively.

2 Ratings otherwise considered suitable for advancement may be recommended for exemption under the conditions laid down in A I G 2171/34

3 King's Regulations and Admiralty Instructions Appendix XVII Part I Nos 10 and 100 will be amended.

1660 Warrant Workmaster —Professional Examination, July 1935—Result.

(M D G 3244/35 —8 8 1935)

The following result was obtained at the R N Hospital, Haslar, on July 30 1935 :—

Rating	Name	O N	Port Divn	Marks								Result
				Part I		Part II		Part III	Part IV	Total		
				Paper	Oral	Paper	Oral	Paper	Oral	Paper	Oral	Max.		
				250	50	300	50	150	50	100	50	900		
S B C P O	Palmer F	M 17357	Dev	145	40	190	33	107	35	68	30	644	Passed
S B C P O	Phillips R H S	M 23421	Dev	130	35	126	44	125	47	79	95	681	Passed
S B C P O	Barnard D	M 34709	Ports	150	41	170	45	110	47	88	45	693	Passed

ARTICLE 1447

* * * * *

[illegible] at the end of each [illegible] officer [illegible] dated [illegible] associated during the month [illegible] as follows —

(i) [illegible] house
(ii) Month [illegible]
(iii) First [illegible] No. Second [illegible] No. } Total
*(iv) Local reactions No
*(v) General reactions No
(vi) Date of issue of vaccine

* Any reactions calling for special remarks should be commented [illegible]

(N [illegible])

ARTICLE 1440

* * * * *

8 Medical Fees —

* * * * *

Per visit (inclusive cost of medicine and medical certificates)	Under 1 mile	1 mile and over	[illegible]	[illegible]	[illegible]	[illegible]
	s d	s d	s d	s d	s d	
Day	1 1½	4 1½	5 1½	[illegible] 1½	7 1½	An addition [illegible] and [illegible] hour [illegible] a visit
Night (10 p m to 7 a m)	4 3	5 [illegible]	[illegible]	10 [illegible]	12 [illegible]	An addition of 2s for each [illegible] over [illegible] with a limit of [illegible] a visit. In very exceptional circumstances the Commanding Officer may, if he considers the fee admissible on the above [illegible] inadequate, refer the matter to the Admiralty, when payment at a higher rate will be considered. He should furnish full particulars, including time of night, duration of visit and nature of the disability (N 1123/35—[illegible] 2 36)

Note —Visits of the rating to the doctor's residence or surgery for consultation are to be paid at the rate of 2s 3d per consultation, which fee should include the cost of any necessary medicine and certificates

Payments in excess of those stated above can be granted in cases of illness or injuries requiring more than ordinary attention, when additional remuneration will be allowed at the discretion of the Admiralty according to the circumstances and nature of the case

In cases of * * * * *

9 * * * * * *

2158 —Gilbert Blane Medal Award
(C W 7067 35 — [illegible] 1935)

Gilbert Blane Medals for the year 1935 have been awarded to Surgeon Commander A A Pomfret, M B , Ch B , D O , D O M S , R N , and Surgeon Commander W G C Fitzpatrick, L R C P & S, R N

2159 —Promotion Examination for Rank of Surgeon Commander—Result
(C W 5993/35 M D G 4796 15 —12 9 1935)

The following officers qualified at the examination for promotion to Surgeon Commander held recently —

Surgeon Lieutenant Commander M Baxter, L R C P & S
*Surgeon Lieutenant-Commander W G C Fitzpatrick, L R C P & S
Surgeon Lieutenant Commander F B Quinn, M B , B Ch
*Surgeon Lieutenant-Commander W A Hopkins, M B , B Ch
Surgeon Lieutenant-Commander J I Cusack, M B , B Ch
Surgeon Lieutenant Commander C R Boland, M B , B Ch

The officers marked * qualified for accelerated promotion

2234 Short Service Medical Officers—Transfer to Permanent List

(C.W. [illegible] 35—11 9 1935.)

With reference [illegible] 2187/31 as soon as possible after January 1 1936 [illegible] Surgeon Lieutenant [illegible] seniority and also those officers of 1931 [illegible] [illegible] should report through the usual channels whether [illegible] transfer to the permanent list. About March 1936 [illegible] [illegible] together and the selections made will be promulgated [illegible]

[illegible] Should any officer [illegible] his decision the fact should be reported [illegible] subsequent applicants [illegible] be considered when the following selection is made.

OBITUARY

We regret to report the following deaths which have occurred since our last issue and [illegible] deepest sympathy to the relatives [illegible]

Surgeon Commander [illegible] Haynes, R.N., who died at R.N. Hospital Chatham [illegible] [illegible] January 9, 1891, and having taken the qualification [illegible] [illegible] in 1916 joined the Service as a temporary Surgeon October 10, 1916. He was [illegible] the Permanent List on February [illegible]

[illegible] the Second [illegible] November 1918 he was appointed to R.N.H. Haslar, where [illegible] [illegible] leaving Haslar he was appointed to H.M.S. [illegible] [illegible] he served in the following ships and establishments [illegible] R.N. Hospital [illegible] [illegible] Devonport Dock [illegible] [illegible] November 1933 he was appointed to H.M.S. [illegible] until April 1935, when he was invalided home and was admitted into R.N. Hospital Chatham on April 28, 1935.

He was promoted to Surgeon Lieutenant-Commander on October 10, 1922, and to Surgeon Commander on [illegible] 1928.

Surgeon Commander Haynes was fond of cricket and tennis, at both of which he excelled.

Surgeon Captain William [illegible] R.N. (ret.), who died on July 5, 1935. He was born on [illegible] 1871 and [illegible] M.B., M.S. [illegible] degrees in 1895.

He joined the Service in 1897 and after the usual course at Haslar was appointed to H.M.S. [illegible] [illegible] the following ships: [illegible] [illegible] [illegible] Welcome [illegible] Auxiliary Hospital [illegible] and [illegible]

He was promoted to Staff Surgeon on May 13, 1904, and to Fleet Surgeon on May 13, 1910. He was placed on the retired list for the age regulation with the rank of Surgeon Captain on January 1, 1923.

Surgeon Captain William [illegible] M[illegible], R.N. (ret.), who died on August 8, 1935, at Edinburgh.

He was born on July [illegible] 1866, and took the M.B., M.S. [illegible] degrees in 1891.

He joined the Service in 1892, and after the [illegible] at Haslar was appointed to H.M.S. *Seahorse*, and subsequently served in the following ships: *Heart of Oak*, *Haslar*, *Iphigenia*, *Illustrious*, [illegible], *Impregnable*, *Iron Duke*, and at [illegible]

He was promoted to Staff Surgeon on November 11, 1903, and to Fleet Surgeon on November 11, 1908.

He finished his Service career [illegible] being placed on the retired list under the [illegible] with the rank of Surgeon Captain on July 10, 1921.

Surgeon Captain M[illegible] was a very popular officer in the Service and an organizer of high ability. He had a good knowledge of all athletic games.

Surgeon General [illegible] Medical Director-General of the Navy, 1929–1932. As we go to press we learn of the sudden death of this most distinguished officer of our branch and extend the deepest sympathy of all Medical Officers of the Royal Navy to [illegible] Chambers.

A tribute to him will be published in our next issue.

GILBERT BLANE MEDAL—AWARD

The Gilbert Blane Medals for the year 1934 have been awarded to Surgeon Commander [illegible] A. [illegible], M.B., Ch.B., D.P.H., D.O.M.S., and Surgeon Lieutenant-Commander W. [illegible] C. Fitzpatrick, L.R.C.P., F.R.C.S.

DEGREES AND DIPLOMAS

[illegible] Commander J M S [illegible] M B [illegible] Public Health [illegible] Certificate of Public Health [illegible] Commander J A Miller M B B Ch [illegible] Surgeon Commander [illegible] Doctor of Dublin) [illegible] 1935 and also [illegible] Centenary [illegible] Surgeon Commander [illegible] R Scott M B [illegible] M B

RETIREMENTS

Sir Humphry Rolleston B C G V O K C B M D F R C [illegible] appointed Consulting Physician to the Royal Navy in succession to the late Sir Thomas Horder.

Sir Humphry has been closely connected with the Medical Branch of the Navy for many years. In the last war he held the rank of Surgeon Rear Admiral and was Medical Member of the Admiralty Board 1912-1919. Mentioned in Despatches, he received the Belgian Order of Leopold and the Croix de Guerre. He was Director General of Medical Services of the Navy 1919-1923. Consulting Physician 1923-1935.

On his retirement Sir Humphry Rolleston received the appreciation of the Naval side of the Council and the Editorial Committee of the Journal.

Surgeon Rear Admiral H D H Davis C B M R C S F R C P L L D D S [illegible] retired list on retirement [illegible] 1938.

Surgeon Commander W J Thyne M D promoted to the rank of Surgeon Captain [illegible] 1935.

PROMOTIONS

Surgeon Captain L Warren O B E M B L S M R C S F R C P [illegible] Rear Admiral [illegible] 1935.

Surgeon Commander (R retired) E N W W Bullalph M R C S F R C P [illegible] Captain (Retired) March [illegible] 1938.

Surgeon Lieutenant Commander W G C Pasquaitch F R C P [illegible] Commander January 1 1934.

Surgeon Lieutenant-Commander D H Kitchen M B B Ch to be Surgeon [illegible] July 8 1935.

Surgeon Lieutenant Commander M Maltby F R C P & S [illegible] August 29, 1935.

Surgeon Lieutenant-Commanders F C Dann M B [illegible] M B A I M [illegible] B Ch to be Surgeon Commanders Sept [illegible] 1935.

Surgeon Lieutenant Commander S G Wolfe M B B Ch [illegible] Commander September 10 1935.

Surgeon Lieutenant W M Green M B C M to be Surgeon [illegible] August 18 1935.

Surgeon Lieutenant A M Lawrence Smith M B Ch B to be Surgeon Commander August 18 1935.

Surgeon Lieutenant S Jamieson F R S A to be Surgeon [illegible] September 18 1935.

Surgeon Lieutenants (D) A W Y Pyke L D S and P A Peart L D S [illegible] Lieutenant Commanders (D) July 25 1935 confirmed in rank [illegible]

Acting Surgeon Lieutenant (D) W J W Rot [illegible] D S confirmed in rank [illegible] 1934.

Acting Surgeon Lieutenant (D) R. S. J. Jukins L.D.S. confirmed in rank May [illegible]

Acting Surgeon Lieutenants (D) A C Horne B.D.S. (N.Z.) and [illegible] confirmed in rank January 16 1935.

Acting Surgeon Lieutenant (D) P [illegible] Ferris L.D.S. confirmed [illegible] 1934.

APPOINTMENTS

June

Surgeon Commander R P Nunn M B to H M Dockyard Portsmouth

Surgeon Lieutenant Commander R. Russell M B B.S. to [illegible]

JULY

Surgeon [redacted] W Bradbury D R O M B B Ch to M[redacted]
Surge[redacted] I n J Kirker L R C P & S. to R M Infirm[redacted]
M B Ch B [redacted] R Barracks, Portsmouth H J Sco[redacted] M[redacted]
Data J D Dunlop M B M R C S L R C P, to *Cardiff* [redacted] M[redacted]
R N Hospital H H Ly[redacted] (and as Specialist in Radiology) A W [redacted]
Department (and as Assistant [redacted] M D G) C D Brownfield [redacted]
L R C P to *H*[redacted] A W Cooking M R C S L R C I [redacted]
R Hoffman M B B S to *Fordon* (as Squadron M O) R A [redacted]
Raul (as Squadron M O) W J Mouat M B M R C S L R C I [redacted]
Inhaim nil

Surgeon Lieutenant Commanders C A Miller, M B B Ch to *Hawke* [redacted]
M B Ch B to R N Hospital Plymouth (and as ophthalmic specialist) [redacted] W Hamm[redacted]
M B M Ch to *Despatch* F E A Sewell M R C S L R C P to H M *Dockyard* Sheerness

Surgeon Lieutenant Commanders (D) L A Menies L D S to *Ganges* F W Watt L D S to Talbot

Surgeon Lieutenant W A Ryan M B B Ch to *Indefatigable* W invalided M B Ch B to H M Naval Base, Singapore (and as specialist in bacteriology) A Long M B C P, L R C P to R N Hospital Chatham (and as specialist in anæsthetics) A P C Clark, M D to *York* L C Yeufil L M S S A to *Terrible* J M T Rose M R C S L R C P D P H to Codrington J L S Boulter M R C S L R C P to *Manic* (and as G U specialist) J M Holland M R C S, L R C I to Talbot

Surgeon Lieutenant (D) S R Wallis L D S, to *Ramillies*

AUGUST

Surgeon Rear Admiral L Weeren O B E M B B S M R C S L R C P to R N Hospital Malta (and as M O in charge)

Surgeon Captain J G Barron M D Ch B M R C I to R N Hospital Chatham (and as specialist in medicine) [redacted] Menzies Browne M R C S L R C P to R N Barracks Portsmouth K H Hole O B E M B B S M R C S L R C P to R N Barracks Devonport

Surgeon Commanders J C Brown M R C S L R C P to *Barham* L L Sturgwell M B E S M R C S, L R C P to *Mount Sovereign* (and as specialist in Ophthalmology, Home Fleet and as Squadron M O) P G Hunt M B B Ch to *Glorious*; A de P Joyce M B B Ch to *Excellent* (and as specialist in ophthalmology) C E Heath M R C S, L R C P, to *Courageous* (and as Squadron M O) A H Hankin M B B S to R N Barracks Portsmouth (and as G U specialist) G D Macintosh M B to *Triton* W J Colhoun M R C S L R C P to *Rodney* (and as Surgical Specialist, Home Fleet) C H Savery M R C S L R C P to R N Barracks Chatham A C Paterson M R C S L R C P to R N Barracks Chatham (and for A G Sub-al [redacted] and as specialist in abnormal diseases)

Surgeon Lieutenant Commanders I J Kestill M B B Ch M R C S L R C P, D T M & H to R N Hospital, Haslar F B Quinn M B B Ch to R N Barracks, Portsmouth C R Boland M B B Ch to *Woolwich* M Barton L R C P & S to R N Barracks Devonport G Keating M B M L R C P & S to R N Hospital Plymouth (and as Surgical specialist) H G Wells M B B Ch M R C S L R C P to R N Barracks Devonport (and for A C School (and as specialist in abnormal diseases) R Russell M B B Ch to *David* W V Beach M R C S, L R C P to *Dragon*

Surgeon Lieutenant Commanders (D) B J Brown L D S to R N Barracks Chatham (and for M T I D Barker L D S to *Woolwich*

Surgeon Lieutenants S C S Cosbe M R C S L R C P S *to Dentfoot* S J van Felt M B B S to *Barham* M Cay M B Ch B to *Royal Sovereign* [redacted] Bradbury M B B Ch to *Underdown* B R Alderson L R C P & S to *Glorious* D C Dobson M B Ch B to *Bridgewater* W M Goss to *Galatea* E M Dubbs M B Ch B to *Wanbush* D W Ewin M B B Ch to Heston D W Welsh, M B Ch B to *Furious* F Bush, to Montrose

Surgeon Lieutenant (D) W L Mountain L D S to *Royal Sovereign*

SEPTEMBER

Surgeon Commanders T Madill M B B Ch to *Orion* (and as Squadron M O) C N Ratcliffe M R C S L R C I to R N Hospital Chatham (as specialist in radiology) W E Heath M R C S L R C P to R N Barracks Portsmouth (and as G U specialist)

Surgeon Lieutenant Commanders W E S Pendredge M R C S L R C P to *Nelson* A D Sandan M B to H M Dockyard Gibraltar I J Cusack M B B Ch to *Pontinor* J Cussen M B B Ch to *Furious* E J Mackie M B B Ch D P H to R N Hospital Chatham T I J Barry M B B Ch to *London Derry*

Surgeon Lieutenant-Commanders (D) T G A G Embleton L D S, to *St Vincent* P S Turner L D S to *Ganges* L V Dungal L D S to R N Barracks, Chatham

Surgeon Lieutenants G E Thoms to *Campbell*; R A H Turner M R C S L R C P to *Resolution* E I Ellis M R C S L R C P to *St Ingoe* F W Shippindale M B M R C S L R C P to *Alcide* W J M Sadler M R C S L R C P to R N Hospital Malta (and as G U specialist)

ENTRIES

M[illegible] M B B S M R C S L R C P L M [illegible] S A [illegible] L S A D S Cant L M S S A N S H [illegible] M D L S A D P H M R C S L R C P D S M [illegible] M R C S L R C P L S A M B Ch B J L S S [illegible] W H [illegible] L R C P entered as Surgeon Lieutenant [illegible] R [illegible] (for commissions) [illegible]

WARDMASTERS

[illegible] D Lately to R N Hospital Haslar [illegible] [illegible] R N Barracks Chatham Sept [illegible] Canopus [illegible] Plymouth Sloop Scptember [illegible] Hospital Malta Sept [illegible] and W I Creek to R N Hospital Rosyth on transfer of P S Lestris)

ROYAL NAVAL VOLUNTEER REVSERVE

CIVIL APPOINTMENT

Surgeon Lieutenant Commander Lambert Rogers R N V R has been appointed Professor of Surgery and Director of the Surgical Unit, the Welsh National School of Medicine Cardiff Hon Surgeon to the Cardiff Royal Infirmary

RETIREMENTS AND RESIGNATIONS

Surgeon Lieutenant Commander I T Dobson M R C S L R C P resigned July 1935

PROMOTIONS

Surgeon Lieutenant G F S Price to be Surgeon Lieutenant Commander May 26 1935
Surgeon Lieutenant R D Bradshaw M B to be Surgeon Lieutenant Commander June 14 1935
Surgeon Lieutenant L H Parkinson to be Surgeon Lieutenant Commander June 29 1935
Surgeon Lieutenant D W Bowden M B F R C S to be Surgeon Lieutenant Commander July 26 1935
Surgeon Lieutenant E R G Page M R C S L R C P to be Surgeon Lieutenant Commander August 12 1925
Surgeon Lieutenant G E M Beeson M B Ch B confirmed as Surgeon Lieutenant, August 4 1927
Surgeon Lieutenant (D) R Symmons L D S to be Surgeon Lieutenant Commander (D) June 29 1935
Probationary Surgeon Lieutenants W G Campbell M B Ch B F R C S L D S, confirmed as Surgeon Lieutenant January 12 1931 I F Dunlop M B Ch B D P H J T M & H confirmed as Surgeon Lieutenant July 24 1935
Probationary Surgeon Lieutenant (D) J Banyan L D S confirmed as Surgeon Lieutenant (D) May 15 1934
Probationary Surgeon Lieutenant (D) A C Fuller L D S confirmed as Surgeon Lieutenant (D) July 17 1934
Surgeon Sub Lieutenant D Shiels M B Ch B to be Surgeon Lieutenant July 8 1935
Surgeon Sub Lieutenant K E O Ringdal M R C S L R C P to be Surgeon Lieutenant July 26 1935
Probationary Surgeon Sub Lieutenants K E O Ringdal confirmed as Surgeon Sub Lieutenant June 29 1934 J R W Maynard confirmed as Surgeon Sub Lieutenant July 17 1934 P E B Grey confirmed as Surgeon Sub Lieutenant August 1 1934 W H Osborn confirmed as Surgeon Sub Lieutenant August 1 1934

APPOINTMENTS

June

Surgeon Lieutenant R H Endell M R C S L R C P *to Royal Sovereign*
Surgeon Lieutenant G H C R Chilton M B *to Rodney*
Surgeon Lieutenant D Simpson M B Ch B transferred from 2nd II to 1st I Mersey Division
Probationary Surgeon Lieutenant N A Vanner M R C S L R C P *to Iron Duke*
Probationary Surgeon Lieutenant (D) J Banyan L D S to R N Hospital Chatham

July

Surgeon Captain L S Ashcroft V D M B Ch B *to Tuhant* J B Rmaldson V D M D K B E *to Benbow*
Surgeon Commanders L C D Irvine V D *to Nelson* T W Drummond L R C P & S L D S *to Curacoa* W I Macartney V D M B *to Indefatigable* F L Cassidi M B *to Hawkins* S W Davidge M D *to Calypso* R Hill M B Ch B *to Cardiff* C A Clark M B *to R N Barracks Devonport*
Surgeon Lieutenant Commander St G B D Gray F R C S *to Pegasus* G A Maden

[illegible] Barracks [illegible] to McCo[illegible] [illegible] Scobie M I
[illegible] R Won[illegible] RN Barracks [illegible] Wilson M
[illegible] RN Base Re[illegible]onth [illegible] M Wood MRCS LRCP
[illegible] *Calcutta* A H Shadwell MRCS LRCP to *Egmont* [illegible] R J Mathie—
Mentioned in Despatches
Surgeon Lieutenant-Commander H Barracks Portsmouth to [illegible] Eva MRCS LRCP
[illegible] B W I Acting Surgeon M H to Impregnable [illegible] Hudson to *Pangbourne* J B Hutchinson to RN Barracks Devonport W I Elliott MD to *Excellent* A S Bradlaw to RN Barracks Portsmouth R B H Wyatt MB ChB MRCS LRCP DPH to *Pembroke* A L Olsen MD DPH RCPI & S to RN Barracks Chatham S B Smithwick MB to HMAS *Australia*

Surgeon Lieutenants C A Mather MB ChB to *Legion* W H Roberts MRCS LRCP to *Pangbourne* R S Redfield MRCS LRCP to Tiger D Simpson MB ChB to HMAS *Australia* D R Goodfellow BSc MRCS LRCP to shore duty from Lieut to Lieut H Murray Division F E St J Lyttelton MB to HMAS *Australia* R G Reid MB ChB to *Rodney* J J Hegarty MB ChB to *Tiverton* J E M Major MB BS to *Ramillies* W H Pow LRCP to RN Hospital Chatham

Surgeon Lieutenants (D) C E Britton LDS to RN Hospital Haslar A R Bajamun LDS to RN Barracks Portsmouth R D Daly LDS to *Hood*

Probationary Surgeon Lieutenants A B Corrigan MB ChB to *Pegasus* W I Campbell MB ChB LDS to *Shrewsbury* R W C Lincoln MRCS LRCP to RN Hospital Chatham G I Fyfe BCh to *Tiger* R F Reed to *Iris*

Probationary Surgeon Lieutenant (D) A C Fuller to *Rodney*

Probationary Surgeon Sub Lieutenants R. R. Trotter to *Royal Sovereign* W H Osborne to *London* J B W Hayward to *London* R P B Bennett to *Revenge* F H K Gray to *Tenedos* C R Dodds to *Hood* to S Bruce to *Revenge* R P Phillips to *Echo* C P Nicholls to *Shropshire* R A Jones to *Devonshire* R T Moir to Nelson J S Shephard to D S Macphail to *Birkenhead* D M Edwards to *Rodney*

AUGUST

Surgeon Commanders C C Elliott MRCS LRCP DSC to *Tiverton* M Parry Evans MRCS LRCP to RN Hospital Haslar

Surgeon Lieutenant-Commanders H A M Withby MRCS LRCP to *Rodney* J D Simpson MB BCh MRCP to *Excellent* R L Stubbs to RN Hospital Haslar F I Henderson MB to *Barossa*

Surgeon Lieutenants T H Paton MB ChB to *Benbow* A M Pearson MB MRCS LRCP to RN Barracks Portsmouth

Probationary Surgeon Lieutenants E J S Wobbs MB MRCS LRCP to *Ramillies* W D M Mallin MB transferred from Lieut H to Lieut Tyne Division

SEPTEMBER

Surgeon Lieutenant-Commander H M Pitty MB ChB to RN Hospital Haslar

Surgeon Lieutenants D K Hughes MB ChB to *Neptune* W H C Watson LRCP to *Neptune* A Elliott MB ChB MRCS LRCP DPH to *Rodney*

Probationary Surgeon Sub Lieutenants E I Cogle to *Rodney* J E Anderson to *Lion*

ENTRIES

Mr R C Archer MB ChB entered as Probationary Surgeon Lieutenant List I Clyde Division (Headquarters) June 26 1935

Mr H L Wade MB ChB entered as Probationary Surgeon Lieutenant List I Mersey Division (Headquarters) August 17 1935

Mr F J S Gower MB BS FRCS LRCP entered as Probationary Surgeon Lieutenant List II London Division August 23 1935

QUEEN ALEXANDRA'S ROYAL NAVAL NURSING SERVICE

RETIREMENTS

Nursing Sister Mrs I Whiting resigned August 31 1935
Nursing Sister Miss S E T Thompson resigned September 15 1935

ENTRIES

Miss Dorothy Katharine Drake entered as Nursing Sister on probation September 16 1935

APPOINTMENTS

Nursing Sister Miss M E Cawston to RN Hospital Malta
Nursing Sister Miss L K Coleman to RN Hospital Haslar
Nursing Sister Miss I C Dublin to RN Hospital Malta
Nursing Sister Miss K M Cooper to RN Hospital Plymouth
Nursing Sister Miss N S Garnet to RN Hospital Haslar
Nursing Sister Miss F M Fowler to RN Hospital Haslar
Nursing Sister Miss S M Sid James to RN Hospital Plymouth
Nursing Sister Miss D K Drake to RN Hospital Chatham

Notices

THE INCORPORATED SOLDIERS AND SAILORS HELP SOCIETY (LORD ROBERTS MEMORIAL WORKSHOPS)

Chairman—THE DUCHESS ROBERTS DBE

Silver Jubilee Appeal

In connection with this Appeal we have received the following letter —

SIR,—Many throughout the Empire will recall the early days of the Great War, the perils with which the country was confronted the turmoil and anxiety of those days—tragic memories—but relieved by remembrance of the gallant and ready service of the men who fought for us during the long years of conflict that lay ahead.

Now seventeen years since that conflict ended, we are still striving to repay the debt we owe to those who, in consequence of their service to the Empire have been seriously handicapped in life

The Soldiers and Sailors Help Society (Lord Roberts Memorial Workshops) of which I am Chairman, has extended a helping hand in numerous ways to considerably over a million necessitous cases has been instrumental in placing in employment 111,953 men and has trained and employed thousands of the severely disabled I acknowledge with deep gratitude the generosity of the public which has made this possible

The Society is however continually hampered by lack of funds to respond adequately to the many demands made upon it and I hope in this Jubilee Year of national rejoicing the claims of the ex Service men in distress will not be forgotten

I earnestly appeal to each of your readers to contribute as liberally as may be in his or her power and so to assist in lifting the burden borne by these men

Will donors address their gifts to me Countess Roberts, Incorporated Soldiers and Sailors Help Society (Lord Roberts Memorial Workshops) 123 Brompton Road, Room T London S W 3

Yours truly
[Signed] ROBERTS
Chairman

LIVINGSTONE'S CATECHISM SERIES

Messrs E and S Livingstone 16 and 17 Teviot Place Edinburgh the publishers of this well known Series have just provided an attractive show case for the complete Series of 60 odd separate parts and also the bound volumes of certain subjects are adequately displayed

Every medical bookseller in the country is in possession of one of these show cases, so that purchasers will now have the opportunity of seeing and handling the Series without difficulty or inconvenience Attractive show cards and prospectuses have also been circulated and prospectuses are still available for anyone who wishes to have them

In this Series over 20,000 questions of interest and importance in every medical student are answered, securing rapid revision of any subject in the minimum of time and with the maximum results

The popularity of this Catechism Series has been long established among all classes of medical students and the additional publicity which it is now receiving will no doubt add greatly to its already wide circulation

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THE EDITOR [illegible] Naval Officers to send [illegible] Papers [illegible] professional subjects [illegible] personal experience [illegible] items of news and matters of interest [illegible] the Naval Medical Service will be welcomed from ships and establishments at home and foreign stations.

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